



## Tetra Tech EM Inc.

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EPA Region 5 Records Ctr.



259781

October 7, 2005

Mr. Ken Theisen  
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**Subject: Site Assessment Report  
Outboard Marine Corporation Plant #2  
Waukegan, Lake County, Illinois  
Technical Direction Document No. S05-0507-002  
Tetra Tech Contract No. 68-W-00-129**

Dear Mr. Theisen:

The Tetra Tech EM Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START) is submitting the enclosed U. S. Environmental Protection Agency (EPA) site assessment report for the Outboard Marine Corporation (OMC) Plant #2 in Waukegan, Illinois. Tetra Tech was the START contractor present during the soil and sediment sampling activities performed by On-Site Environmental Services, LLC.

If you have any questions or comments about the report or need additional copies, please contact me at (262) 879-0175 ext. 225.

Sincerely,

Ken Brown, CHMM  
Environmental Scientist

Enclosure

cc: Lorraine Kosik, U.S. EPA START Project Officer  
Therese Gioia, Tetra Tech START Program Manager

**U. S. ENVIRONMENTAL PROTECTION AGENCY  
SITE ASSESSMENT REPORT  
OUTBOARD MARINE CORPORATION PLANT #2  
WAUKEGAN, LAKE COUNTY, ILLINOIS**

**Prepared for**

**U.S. ENVIRONMENTAL PROTECTION AGENCY  
Region 5 Emergency Response Branch  
77 West Jackson Boulevard  
Chicago, IL 60604**

|  |                                |
|--|--------------------------------|
| <b>TDD No.:</b>                          | <b>S05-0507-002</b>            |
| <b>Date Prepared:</b>                    | <b>October 7, 2005</b>         |
| <b>Contract No.:</b>                     | <b>68-W-00-129</b>             |
| <b>Prepared by:</b>                      | <b>Tetra Tech EM Inc.</b>      |
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## ACRONYMS AND ABBREVIATIONS

|                       |  |
|-----------------------|--|
| ACM                   | Asbestos-containing material   |
| AOC                   | Area of concern  |
| bgs                   | Below ground surface   |
| CFR                   | Code of Federal Regulations  |
| Deigan                | Deigan and Associates, LLC   |
| EI                    | Environment Inc.   |
| IEPA                  | Illinois Environmental Protection Agency                                       |
| mg/kg                 | Milligram per kilogram   |
| #                     | Number   |
| On-Site               | On-Site Environmental Services, Inc.   |
| OMC                   | Outboard Marine Corporation  |
| PA/VSII               | Preliminary assessment/visual site inspection                                  |
| PCB                   | Polychlorinated biphenyl   |
| ppb                   | Parts per billion  |
| ppm                   | Parts per million  |
| PRP                   | Potentially responsible party  |
| START                 | Superfund Technical Assessment and Response Team                               |
| SWMU                  | Solid Waste Management Unit  |
| TDD                   | Technical Direction Document   |
| TechLaw               | TechLaw, Inc.  |
| Tetra Tech            | Tetra Tech EM, Inc.  |
| U.S. Bankruptcy Court | U.S. Bankruptcy Court for the Northern District of Illinois - Eastern Division |
| U.S. EPA              | U. S. Environmental Protection Agency  |
| USGS                  | United States Geological Survey  |
| VOC                   | Volatile organic compound  |



## 1.0 INTRODUCTION

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Under Technical Direction Document (TDD) No. S05-0507-002, the U. S. Environmental Protection Agency (U.S. EPA) tasked the Tetra Tech EM Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START) to perform an environmental assessment at the Outboard Marine Corporation (OMC) Plant Number 2 (#2) site in Waukegan, Lake County, Illinois. The OMC Trust had previously conducted waste removal activities in fall 2002, and U.S. EPA had conducted waste removal activities in summer 2003.

Polychlorinated biphenyl (PCB) contamination was documented by Deigan and Associates, LLC (Deigan) of Libertyville, Illinois during sampling events on the lakefront portion of the former OMC Plant #2 property in July 2004, October 2004, and May 2005. In response to the PCB contamination found outside of the east sediment containment cell, U.S. EPA contracted Tetra Tech to conduct an environmental site assessment. Specifically, Tetra Tech was assigned to develop a field sampling plan; perform oversight of soil boring activities performed by On-Site Environmental Services, Inc. (On-Site); collect soil samples for laboratory analysis; provide site photographic documentation; provide a written log documenting all on-site activities; and prepare a site assessment report. The purpose of this site assessment is to confirm PCB contamination in the lakefront portion of the former OMC Plant #2 property, and refine the extent of PCB contamination as determined by Deigan.

Section 2.0 of this report discusses site location and background information. Section 3.0 discusses site assessment activities, including soil and sediment sampling. Section 4.0 summarizes Tetra Tech's findings during the site assessment. Section 5.0 summarizes Tetra Tech's recommendations. References cited in the report are listed after Section 5.0. Appendix A provides photographs of Tetra Tech's soil sampling activities. Appendix B provides Tetra Tech's written log documenting field activities. Appendix C provides validated analytical results for the samples collected by Tetra Tech.



## 2.0 BACKGROUND INFORMATION

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This section discusses OMC Plant #2's location and description as well as its history.

### 2.1 SITE LOCATION AND DESCRIPTION

Sampling activities summarized in this report were performed at the OMC Plant #2 property, located at 90 Sea Horse Drive in Waukegan, Lake County, Illinois (see Figure 1). Plant #2 is bordered to the north by a drainage ditch (North Ditch) and the North Shore Sanitary District plant; to the east by public beaches on Lake Michigan; to the south by Sea Horse Drive and a drainage ditch (South Ditch) located along the southern property boundary; and to the west by the Elgin, Joliet, and Eastern Railroad. South of Plant #2 between Sea Horse Drive and Plant #1 is the Waukegan Coke Plant Superfund site and the National Gypsum Company facility.

In December 2000, OMC filed for bankruptcy under Chapter 11 and ceased operations at Plant #2. Bombardier Motor Corporation bought OMC assets, including product lines, facilities, and Plant #1, which it currently operates. The Plant #2 building measures about 1,036,000 square feet and has been divided into five large areas: (1) the new die cast area, (2) the grit blasting area, (3) the metal working area, (4) the parts storage area, and (5) the old die cast area. Several drainage systems are present under various plant areas, and some of the drains are reportedly plugged (Tetra Tech 2002). North of the Plant #2 building are two sediment containment cells (east and west), which contain sediment from Waukegan Harbor removed during a removal action in 1991. The lakefront portion of Plant #2 (where sampling took place) is situated along the eastern edge of the fence line between Plant #2 and Lake Michigan (see Figure 2 for the sampling area location).







0 1000 2000  
SCALE IN FEET



QUADRANGLE LOCATION

OUTBOARD MARINE CORPORATION  
WAUKEGAN, LAKE COUNTY, ILLINOIS  
TDD NO. S05-0507-002

**FIGURE 1**  
SITE LOCATION

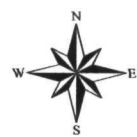
**Tetra Tech EM Inc.**

SOURCE: MODIFIED FROM USGS, 1993a and 1993b





- LEGEND
- ▲ TETRA TECH SAMPLES
  - DIEGAN AND ASSOCIATES SAMPLES (2004-2005)
  - OMC BEACHFRONT PROPERTY BOUNDARY
  - East Sediment Containment Cell



0 62.5 125  
Feet

OUTBOARD MARINE CORPORATION  
WAUKEGAN, LAKE COUNTY, ILLINOIS  
TDD NO. S05-0507-002

FIGURE 2  
SOIL AND SEDIMENT  
SAMPLING LOCATIONS

**Tetra Tech EM Inc.**

SOURCE: MODIFIED FROM USGS, 2002.



## 2.2 SITE HISTORY

Construction of the Plant #2 building began in 1949. Plant #2 was used for manufacturing operations that included aluminum smelting and holding, aluminum die casting, aluminum machining, polishing and finishing, spray painting, parts assembly, parts washing, chromate conversion coating, and wastewater pretreatment.

OMC used large quantities of hydraulic fluid containing PCBs in its die casting operations from approximately 1961 to 1972. In the 1980s, sediment in Slip 3 of Waukegan Harbor was found to contain PCBs at concentrations over 500 parts per million (ppm). PCB-containing hydraulic fluid was reportedly discharged through the Plant #2 floor drain system to Waukegan Harbor. From 1989 to 1995, U.S. EPA conducted remedial activities that included hydraulic dredging of sediment in the North Ditch and Waukegan Harbor (Slip 3 and surrounding areas); thermal treatment of the sediment; and placement of the treated sediment in three on-site containment cells – the East Containment Cell, the West Containment Cell, and Former Slip 3. Each containment cell has a well system that maintains an inward hydraulic gradient. Postclosure groundwater monitoring indicates that PCB concentrations in groundwater have been below the detection limit except in April 2000, when samples from monitoring well MW-10 contained 1.7 parts per billion (ppb) PCBs.

TechLaw, Inc. (TechLaw) performed a preliminary assessment/visual site inspection (PA/VSI) at the OMC site in July 2001. TechLaw identified 20 solid waste management units (SWMU) and four areas of concern (AOC) (TechLaw 2001).

In July 2001, the U.S. EPA Region 5 Waste, Pesticides, and Toxics Division performed a limited sampling investigation at the OMC site in conjunction with the PA/VSI conducted by TechLaw. U.S. EPA's sampling investigation is detailed in START's "Discovery Site Visit Report" (Tetra Tech 2002) and U.S. EPA's "Draft Sampling and Analysis Report" (U.S. EPA 2001).

On February 19, 2002, representatives of U.S. EPA, the U.S. Department of Justice, Bombardier, the OMC Trust, and START met at Plant #2 to perform a site walkthrough prior to site investigation activities. During the walkthrough, air, wipe, container, and miscellaneous sampling locations were identified; air monitoring equipment was determined; and sampling needs identified. On March 4 through



6, 2002, U.S. EPA and START conducted an intensive 3-day site investigation based on the locations identified during the site walkthrough. A total of 61 container and miscellaneous samples were collected during the site investigation. Seventy wipe samples were also collected from equipment, flooring, and office furniture in Plant #2; all the wipe samples were analyzed for PCBs. In addition, 14 air samples (five for volatile organic compound [VOC] analysis and nine for PCB analysis) were collected from various locations within Plant #2. Two soil and three sediment samples were collected from locations outside the building on the Plant #2 property, four groundwater samples were collected from monitoring wells previously installed on the Plant #2 property, and 20 samples were collected from suspected asbestos-containing material (ACM) (Tetra Tech 2002).

The site investigation was conducted to evaluate any potential threats, as well as to assess which areas of Plant #2 contained hazardous materials. The analytical results for the samples collected during the site investigation indicated that several areas required attention in terms of waste or product removal and decontamination. The potentially responsible party (PRP) removal activities documented in the PRP Removal Action Summary Report (Tetra Tech 2003a) addressed most of these areas.

Based on the threats to public health and the environment identified during the site investigation, U.S. EPA and Illinois Environmental Protection Agency (IEPA) petitioned the court with objections to the OMC Trust's plan to abandon the property. U.S. EPA, IEPA, and the OMC Trust accepted a settlement agreement on July 17, 2002, involving the "Trustee's Motion for Abandonment of Real Property and Records Relating to Real Property," dated November 1, 2001. The settlement agreement set certain tasks to be completed before the property could be abandoned on the date set in the agreement (November 15, 2002). The property was actually abandoned on December 10, 2002. The tasks completed at Plant #2 by the OMC Trust included removal and disposal of all drums and containers, draining of all tanks, draining and flushing of all transformers, draining and disposal of all hydraulic fluid remaining in machines, draining and disposal of all hydraulic fluids in the chip wringer and hopper machine, and removal and disposal of all batteries and capacitors (U.S. Bankruptcy Court for the Northern District of Illinois - Eastern Division [U.S. Bankruptcy Court] 2002). The tasks were determined based on the findings of the site investigation (Tetra Tech 2002).



The OMC Trust and Bombardier contracted Environment, Inc. (EI) to remove all hazardous materials and liquids from Plant #2. Removal activities began on August 19, 2002, and culminated on November 21, 2002, with the removal and replacement of PCB-containing dielectric fluid from the electrical transformers serving the plant in an attempt to retrofit the transformers with non-PCB fluid and comply with PCB regulations. EI's additional activities during this period consisted of (1) waste removal, (2) machine decontamination, and (3) transformer draining and filling. A START representative was present during removal activities, and observations made during PRP removal activities are documented in START's PRP Removal Action Summary Report dated January 20, 2003 (Tetra Tech 2003a).

U.S. EPA conducted waste removal activities at Plant #2 over a 9-week period beginning in May 2003. The completed removal activities included waste removal, floor decontamination, tunnel inspections, soil and groundwater sampling, asbestos removal, and transformer draining. Based on the analytical results from samples collected during the discovery site visit, it was determined that the majority of PCB contamination existed in the older portions of the plant (western portion). Machines in the metal working area were removed and scrapped, and the floor cleaned with high-pressure, hot water. Tunnels in the old die cast area were inspected and videotaped to document potential contamination sources. No substantial contaminant releases to the environment were observed in the tunnels. Soil and groundwater were sampled during U.S. EPA removal activities to document releases of contaminants to the environment. Transformers were drained and left disconnected.

Air sampling was conducted to determine air quality inside the Plant #2 building and showed that PCB concentrations in air were still elevated. Wipe samples of the ceiling structure collected during PRP removal activities and post-cleaning floor wipe samples indicate that the ceiling and floor may be the sources for PCBs in the air in the older (western) portion of the plant. Concentrations of PCBs in the air may persist until more extensive measures for decontaminating the floor and interior ceiling structure are undertaken. U.S. EPA removal activities are documented in START's EPA Removal Action Summary Report dated December 12, 2003 (Tetra Tech 2003b).

Upon abandonment of the Plant #2 property by OMC Trust on December 10, 2002, U.S. EPA agreed to arrange for 24-hour security of the property and building. U.S. EPA had also arranged for operation and maintenance of the treatment system associated with the sediment containment cells. These services could





only be funded by U.S. EPA for a period of 1 year, and so, as of December 10, 2003, arrangements with the City of Waukegan were required to continue these operations.

In 2004, the City of Waukegan contracted Deigan to perform an environmental site investigation of the easternmost portion of the OMC Plant #2, next to the Lake Michigan shoreline. The sampling area is approximately 13 acres located along the easternmost side of the OMC Plant #2 property. Deigan set up a grid pattern of surface and subsurface borings. Originally, the sampling grid was set up with a 200-foot interval. Concentrations from the first phase of sampling helped determine additional soil boring locations to define the contaminated areas. Sediment samples were collected from approximately 100-foot station intervals along the north and south drainage ditch over three phases of sampling. Three of the soil borings were constructed as shallow monitoring wells to sample the groundwater. Deigan collected soil, sediment, and groundwater samples in July 2004, October 2004, and May 2005. Nine sediment samples were collected from the North Ditch and five samples from the South Ditch. Soil PCB contamination was found in concentrations ranging from 1.2 to 14,000 milligrams per kilogram (mg/kg). PCB contamination was found in sediments at concentrations ranging from 0.068 to 150 mg/kg. The highest soil concentrations were found in the northwest corner of the site near the North Ditch and the east sediment containment cell. Deigan compared soil sample results to IEPA's Tier 1 Residential Soil Remediation Objective of 1 ppm (Deigan 2004). Analytical results of all samples exhibiting detections from Deigan's sampling activities are summarized in Table 1.

In response to the PCB contamination in the lakefront area, the U.S. EPA contracted Tetra Tech to conduct an environmental assessment to confirm the contamination and further define the extent of PCB contamination. Once the extent of contamination is determined, an excavation plan will be developed to address any potential risks to human health or the environment.



**TABLE 1**  
**DEIGAN & ASSOCIATES SOIL SAMPLE ANALYTICAL RESULTS**  
**Outboard Marine Corporation Plant #2, Beachfront Property Area, Waukegan, Illinois**  
**July 2004, October 2004, May 2005**

| LOCATION | DEPTH<br>(feet) | Polychlorinated Biphenyls by EPA Method 8082 (ppm) |              |              |              |          |              |              | Excavation<br>Depth<br>Recommended |
|----------|-----------------|--|--------------|--------------|--------------|----------|--------------|--------------|------------------------------------|
|          |                 | PCB-<br>1016                                       | PCB-<br>1221 | PCB-<br>1232 | PCB-<br>1242 | PCB-1248 | PCB-<br>1254 | PCB-<br>1260 |                                    |
| S-7      | 0-3             | ND   | ND           | ND           | ND           | 1.7      | ND           | ND           |                                    |
| S-10     | 0-3             | ND   | ND           | ND           | ND           | 2.5      | ND           | ND           |                                    |
| S-11     | 5-8             | ND   | ND           | ND           | 1.6          | ND       | ND           | ND           |                                    |
| S-13     | 0-3             | ND   | ND           | ND           | 2.8          | ND       | ND           | ND           |                                    |
| S-18     | 0-3             | ND   | ND           | ND           | ND           | 1.2      | ND           | ND           |                                    |
|          | 5-8             | ND   | ND           | ND           | ND           | 1.2      | ND           | ND           |                                    |
| S-19     | 5-8             | ND   | ND           | ND           | ND           | 1.8      | ND           | ND           |                                    |
| S-20     | 5-8             | ND   | ND           | ND           | ND           | 2        | ND           | ND           |                                    |
| S-23     | 5-8             | ND   | ND           | ND           | ND           | 280      | ND           | ND           | 0 to 9 ft.                         |
| S-25     | 0-3             | ND   | ND           | ND           | ND           | 730      | ND           | ND           | 0 to 9 ft.                         |
|          | 5-8             | ND   | ND           | ND           | ND           | 690      | ND           | ND           | 0 to 9 ft.                         |
| S-26     | 0-3             | ND   | ND           | ND           | ND           | 2.1      | ND           | ND           |                                    |
|          | 5-8             | ND   | ND           | ND           | ND           | 8.1      | ND           | ND           | 4 to 9 ft.                         |
| S-27     | 0-3             | ND   | ND           | ND           | ND           | 9.8      | ND           | ND           | 0 to 4 ft.                         |
| S-29     | 0-2             | ND   | ND           | ND           | ND           | 16.0     | ND           | ND           | 0 to 6 ft.                         |
|          | 4-6             | ND   | ND           | ND           | ND           | 1.3      | ND           | ND           |                                    |
| S-30     | 0-2             | ND   | ND           | ND           | ND           | 1.2      | ND           | ND           |                                    |
|          | 4-6             | ND   | ND           | ND           | ND           | 1.3      | ND           | ND           |                                    |
| S-31     | 0-2             | ND   | ND           | ND           | ND           | 3.2      | ND           | ND           |                                    |
| S-32     | 0-2             | ND   | ND           | ND           | ND           | 6.2      | ND           | ND           | 0 to 3 ft.                         |
| S-34     | 0-2             | ND   | ND           | ND           | ND           | 14,000   | ND           | ND           | 0 to 6 ft.                         |
| S-36     | 4-6             | ND   | ND           | ND           | ND           | 3.7      | ND           | ND           |                                    |
| S-37     | 4-6             | ND   | ND           | ND           | ND           | 1.5      | ND           | ND           |                                    |
| S-40     | 4-6             | ND   | ND           | ND           | ND           | 2.8      | ND           | ND           |                                    |
| S-41     | 4-6             | ND   | ND           | ND           | ND           | 3.9      | ND           | ND           |                                    |
| S-47     | 4-6             | ND   | ND           | ND           | ND           | 17.0     | ND           | ND           | 0 to 7 ft.                         |
| N-SED-01 | -               | ND   | ND           | ND           | ND           | 4.6      | ND           | ND           |                                    |
| N-SED-02 | -               | ND   | ND           | ND           | ND           | 0.90     | ND           | ND           |                                    |
| N-SED-03 | -               | ND   | ND           | ND           | ND           | 0.56     | ND           | ND           |                                    |
| N-SED-04 | -               | ND   | ND           | ND           | ND           | 1.5      | ND           | ND           |                                    |
| N-SED-06 | -               | ND   | ND           | ND           | ND           | 12       | ND           | ND           |                                    |
| N-SED-07 | -               | ND   | ND           | ND           | ND           | 1.7      | ND           | ND           |                                    |
| N-SED-08 | -               | ND   | ND           | ND           | ND           | 0.70     | ND           | ND           |                                    |
| N-SED-09 | -               | ND   | ND           | ND           | ND           | 0.068    | ND           | ND           |                                    |
| S-SED-01 | -               | ND   | ND           | ND           | ND           | 5.8      | ND           | ND           |                                    |
| S-SED-02 | -               | ND   | ND           | ND           | ND           | 150      | ND           | ND           |                                    |
| S-SED-03 | -               | ND   | ND           | ND           | ND           | 4.9      | ND           | ND           |                                    |
| S-SED-04 | -               | ND   | ND           | ND           | ND           | 8.7      | ND           | ND           |                                    |
| S-SED-05 | -               | ND   | ND           | ND           | ND           | 76       | ND           | ND           |                                    |

Notes: Table contains only samples in which PCB concentrations were detected at concentrations exceeding method detection limits.

Value exceeds 10 ppm (40 CFR 761 Requirements for PCB Spill Cleanup)

EPA U.S. Environmental Protection Agency

ND Not detected

PCB Polychlorinated biphenyl

ppm Parts per million

Volume of soil impacted by PCBs exceeding 10 ppm was estimated by Deigan to be 3,300 cyd

### 3.0 SITE ASSESSMENT ACTIVITIES

---

Tetra Tech performed an environmental site assessment in the easternmost portion of the OMC Plant #2 property. The purpose of the site assessment was to determine the extent of PCB contamination in the area east of the east sediment containment cell. The following sections detail the tasks performed during the site assessment.

#### 3.1 SOIL AND SEDIMENT SAMPLING

The purpose of the sampling was to provide more current information about site conditions, to confirm PCB contamination, and determine the extent of contamination. The soil samples were collected using direct push techniques with a small track mounted Geoprobe® rig from On-Site Environmental Services, Inc. (On-Site) of Sun Prairie, Wisconsin.

On August 17, 2005, Tetra Tech and On-Site collected soil samples from pre-determined locations in the area east of the east sediment containment cell (see Figure 2). Soil borings were sampled continuously in 4-foot increments, from a depth of 0 to 4 feet and a depth of 4 to 8 feet. Each 4-foot sample was subdivided into 2-foot increments for classification and sampling. Tetra Tech and U.S. EPA agreed that 2-foot intervals were sufficient for determining an extent of excavation. A few of the sample locations coincided with Deigan sample locations, and the samples collected from these were intended so that results could be compared with those observed by Deigan. The remaining locations were intended to provide better resolution of the extent of contamination.

Soil samples were collected from the groundwater interface depth and above the watertable. Soils consist of mainly fine to medium sand to a depth of about 8 feet below ground surface (bgs). The samples collected were characterized according to soil type, and containerized for laboratory submittal. Samples were analyzed for PCBs using U. S. EPA SW-846 Method 8082, at Great Lakes Analytical, of Buffalo Grove, Illinois. Results of soil sampling activities are summarized in Table 2. Figure 2 depicts locations of soil and sediment samples collected during Deigan's site investigation in 2004 and 2005 and U.S. EPA's site assessment.



**TABLE 2**  
**TETRA TECH SOIL SAMPLE ANALYTICAL RESULTS**  
**Outboard Marine Corporation Plant #2, Waukegan, Illinois**  
**August 17, 2005**

| BORING | DEPTH<br>(feet) | Polychlorinated Biphenyls by EPA Method 8082 (ppm) |              |              |              |              |              |              | % Solids |
|--------|-----------------|--|--------------|--------------|--------------|--------------|--------------|--------------|----------|
|        |                 | PCB-<br>1016                                       | PCB-<br>1221 | PCB-<br>1232 | PCB-<br>1242 | PCB-<br>1248 | PCB-<br>1254 | PCB-<br>1260 |          |
| S-101  | 2-4             | ND   | ND           | ND           | ND           | 1,420        | ND           | ND           | 83.5     |
|        | 4-6             | ND   | ND           | ND           | ND           | 77.2         | ND           | ND           | 81.3     |
| S-102  | 2-4             | ND   | ND           | ND           | ND           | 483.0        | ND           | ND           | 85.4     |
|        | 4-6             | ND   | ND           | ND           | ND           | 1.3          | ND           | ND           | 81.2     |
| S-103  | 2-4             | ND   | ND           | ND           | ND           | 2.0          | ND           | ND           | 81.0     |
|        | 4-6             | 0.09   | ND           | ND           | ND           | 0.1          | ND           | ND           | 84.2     |
| S-104  | 2-4             | ND   | ND           | ND           | 2.31         | 2.0          | ND           | ND           | 82.4     |
|        | 4-6             | 0.40   | ND           | ND           | ND           | 0.5          | ND           | ND           | 82.1     |
| S-105  | 2-4             | ND   | ND           | ND           | ND           | 7,180        | ND           | ND           | 85.3     |
|        | 6-8             | ND   | ND           | ND           | ND           | 2.8          | ND           | ND           | 82.0     |
| S-106  | 2-4             | 0.49   | ND           | ND           | ND           | 0.7          | ND           | ND           | 83.3     |
|        | 4-6             | ND   | ND           | ND           | ND           | 37.5         | ND           | ND           | 83.5     |
| S-107  | 0-2             | 0.48   | ND           | ND           | ND           | 0.7          | ND           | ND           | 82.5     |
|        | 4-6             | ND   | ND           | ND           | ND           | 18.2         | ND           | ND           | 77.3     |
| S-108  | 0-2             | ND   | ND           | ND           | ND           | 1.6          | ND           | ND           | 78.4     |
|        | 6-8             | ND   | ND           | ND           | ND           | 0.1          | ND           | ND           | 82.1     |
| S-109  | 0-2             | ND   | ND           | ND           | ND           | 36.6         | ND           | ND           | 86.7     |
|        | 6-8             | ND   | ND           | ND           | ND           | 0.5          | ND           | ND           | 81.5     |
| S-110  | 2-4             | ND   | ND           | ND           | ND           | 0.4          | ND           | ND           | 93.7     |
|        | 6-8             | ND   | ND           | ND           | 0.51         | ND           | ND           | ND           | 81.8     |
| S-111  | 2-4             | ND   | ND           | ND           | ND           | 0.4          | ND           | ND           | 96.6     |
|        | 6-8             | ND   | ND           | ND           | ND           | 1.2          | ND           | ND           | 81.7     |
| S-112  | 2-4             | ND   | ND           | ND           | ND           | 0.1          | ND           | ND           | 96.2     |
|        | 6-8             | ND   | ND           | ND           | ND           | 0.4          | ND           | ND           | 82.3     |
| S-113  | 2-4             | ND   | ND           | ND           | ND           | 0.0          | ND           | ND           | 97.5     |
|        | 6-8             | ND   | ND           | ND           | ND           | 0.1          | ND           | ND           | 95.4     |
| S-114  | 2-4             | ND   | ND           | ND           | ND           | ND           | ND           | ND           | 92.3     |
|        | 6-8             | ND   | ND           | ND           | ND           | 0.2          | ND           | ND           | 88.9     |
| S-115  | 2-4             | 0.27   | ND           | ND           | ND           | 0.3          | ND           | ND           | 77.4     |
|        | 4-6             | ND   | ND           | ND           | ND           | 0.2          | ND           | ND           | 82.6     |
| S-116  | 0-1/2           | ND   | ND           | ND           | ND           | 1.9          | ND           | ND           | 99.6     |
| S-117  | 0-1/2           | ND   | ND           | ND           | ND           | 1.4          | ND           | ND           | 82.4     |

Notes: Value exceeds 10 ppm (40 CFR 761 Requirements for PCB Spill Cleanup)

EPA U.S. Environmental Protection Agency

ND Not detected

PCB Polychlorinated biphenyl

ppm Parts per million

Figures 3 through 6 were developed using data from Deigan's 2004 and 2005 site investigations and U.S. EPA's site assessment results. Figure 3 depicts PCB concentrations at the surface (0 to 2 feet). Figure 4 depicts PCB concentrations at a depth of 2 to 4 feet. Figure 5 depicts PCB concentrations at a depth of 4 to 6 feet. Figure 6 depicts PCB concentrations at a depth of 6 to 8 feet.

Soil samples collected on August 17, 2005, confirmed the PCB contamination in the northwest corner of the study area and helped refine the area and volume of soil impacted by PCB contamination. Soil PCB concentrations ranged from not detected to 7,180 mg/kg (ppm). According to 40 CFR Section 761.125 Requirements for PCB Spill Cleanup, the industrial criteria is 10 or 25 ppm based on accessibility of the site (10 ppm for nonrestricted access areas, 25 ppm for restricted access areas). Since the study area has nonrestricted access, sample results will be compared to the nonrestricted access cleanup requirement of 10 ppm.

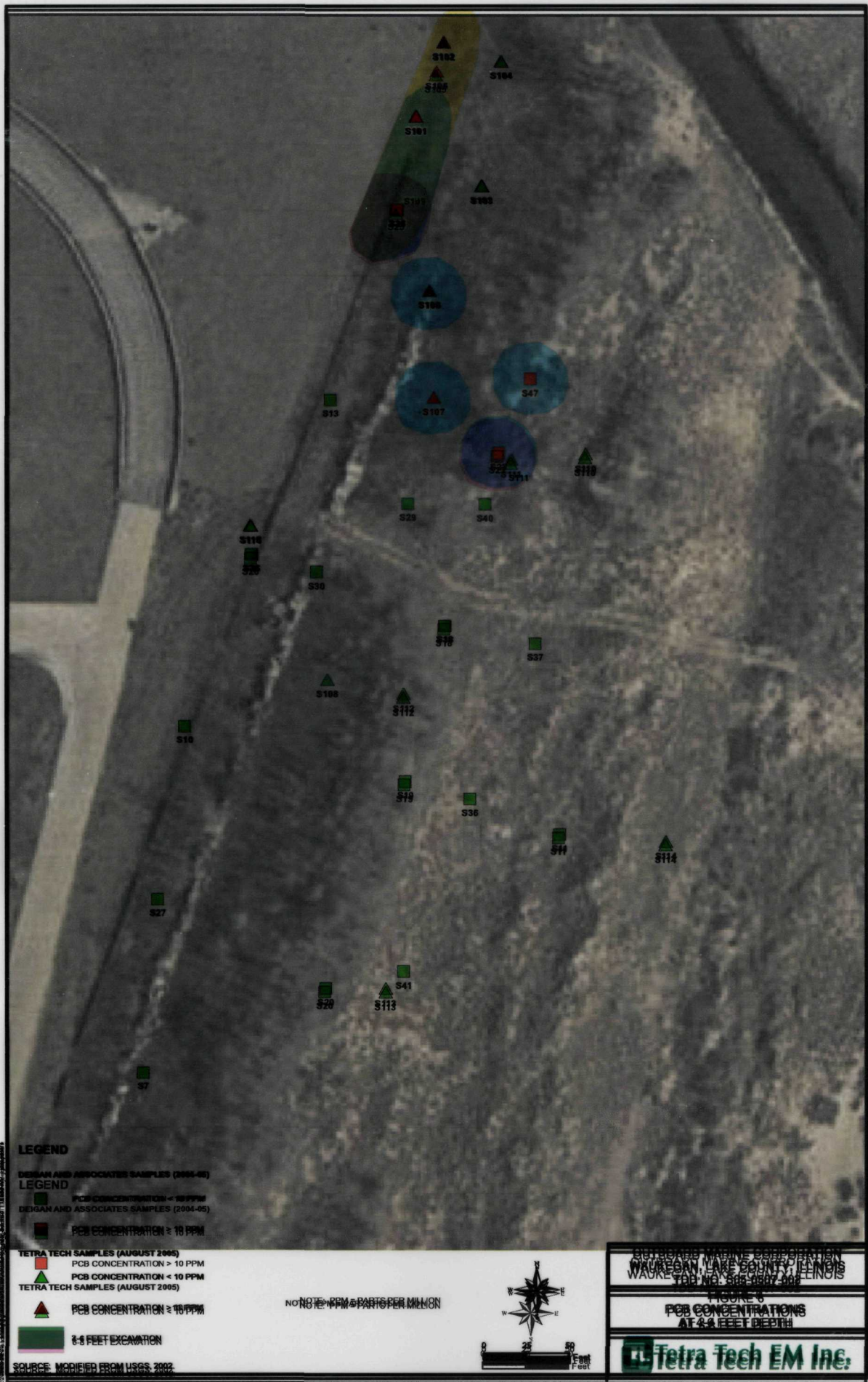
Sediment samples were collected on August 18, 2005 from the drainage ditches to confirm the results from samples collected by Deigan and further refine the extent of contamination. Tetra Tech collected four sediment samples from the South Ditch and one sediment sample from the North Ditch. Samples collected were analyzed for PCBs using EPA method 8082, by Great Lakes Analytical. Two of the Deigan's sediment samples from the South Ditch exhibited PCB concentrations of 76 and 150 ppm. Tetra Tech's sediment sample PCB concentrations ranged from 1.67 to 4.90 ppm, and did not confirm the elevated concentrations observed in Deigan's samples. Results of sediment sampling activities are summarized in Table 3.



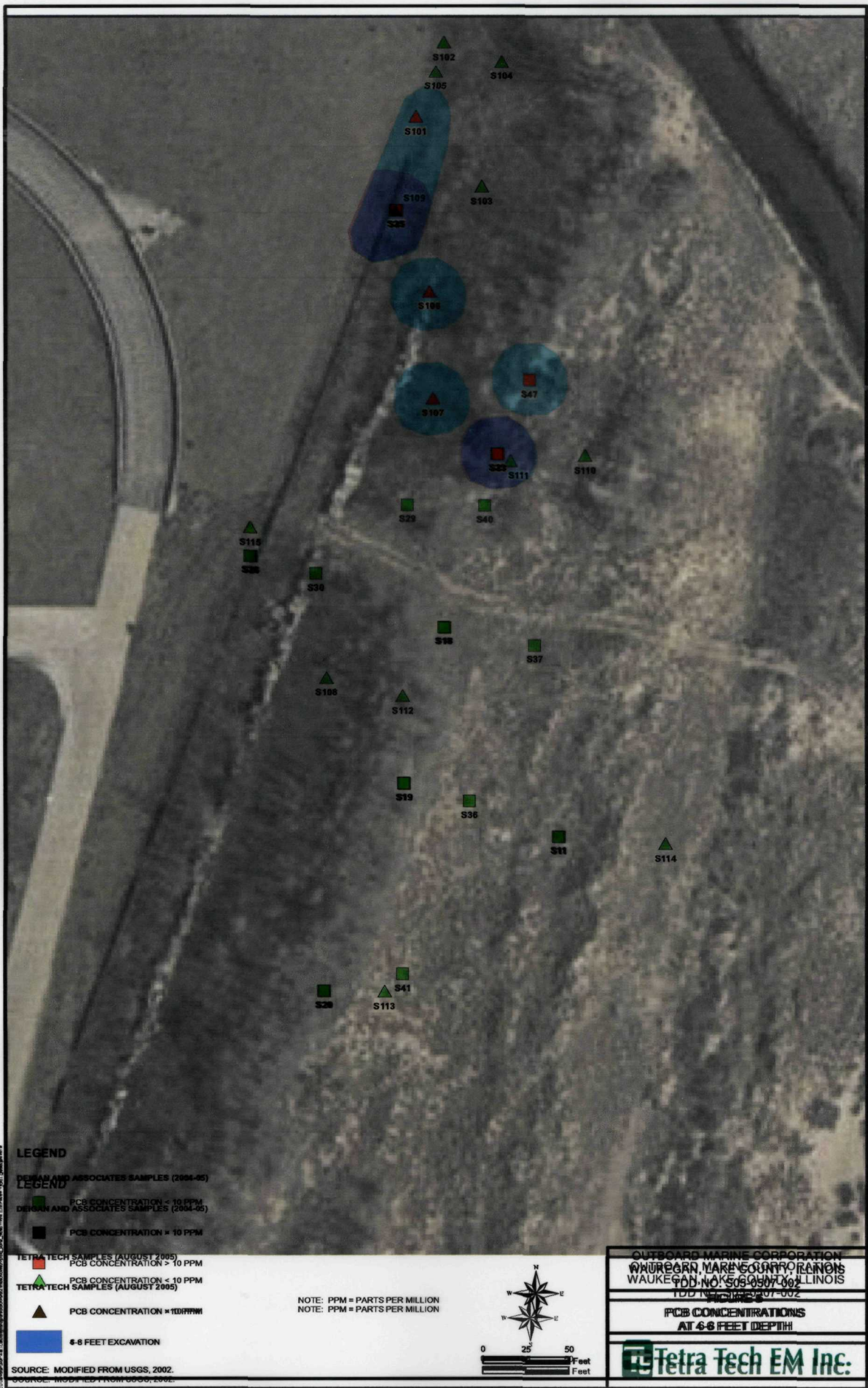




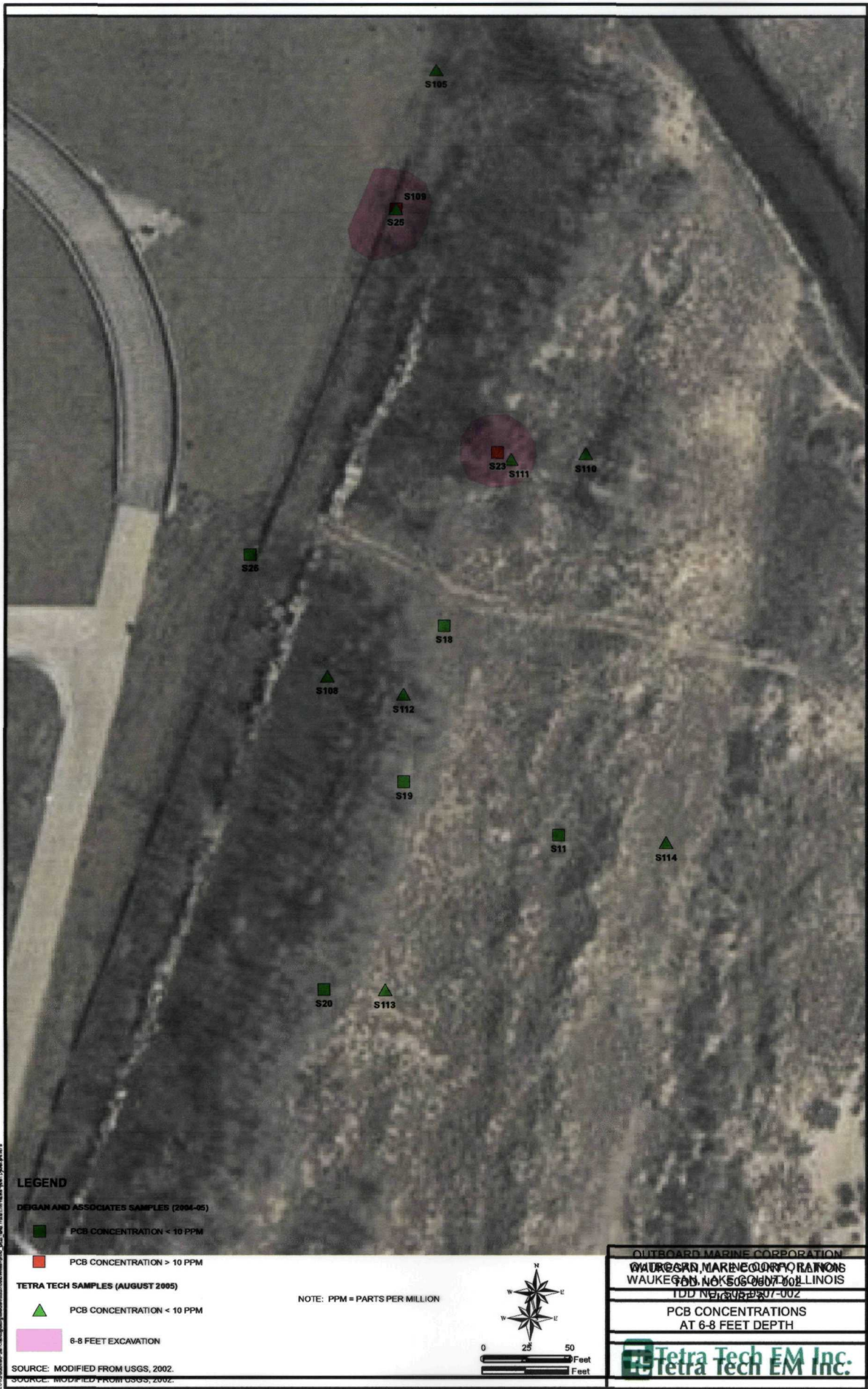












**TABLE 3**  
**TETRA TECH SEDIMENT ANALYTICAL RESULTS**  
**Outboard Marine Corporation Plant #2, Waukegan, Illinois**  
**August 18, 2005**

|           |                 | Polychlorinated Biphenyls by EPA Method 8082 (ppm) |              |              |              |              |              |              |          |  |  |  |
|-----------|-----------------|--|--------------|--------------|--------------|--------------|--------------|--------------|----------|--|--|--|
| SAMPLE    | DEPTH<br>(feet) | PCB-<br>1016                                       | PCB-<br>1221 | PCB-<br>1232 | PCB-<br>1242 | PCB-<br>1248 | PCB-<br>1254 | PCB-<br>1260 | % Solids |  |  |  |
| N-SED 101 | 0-2             | ND   | ND           | ND           | 1.67         | ND           | ND           | ND           | 74.1     |  |  |  |
| S-SED 101 | 0-2             | ND   | ND           | ND           | 2.44         | ND           | ND           | ND           | 72.3     |  |  |  |
| S-SED 102 | 0-2             | ND   | ND           | ND           | 1.81         | ND           | ND           | ND           | 72.5     |  |  |  |
| S-SED 103 | 0-2             | ND   | ND           | ND           | 4.90         | ND           | ND           | ND           | 76.3     |  |  |  |
| S-SED 104 | 0-2             | ND   | ND           | ND           | 1.70         | ND           | ND           | ND           | 74.6     |  |  |  |

Notes: EPA U.S. Environmental Protection Agency

ND Not detected

PCB Polychlorinated biphenyl

ppm Parts per million

### 3.2 POTENTIAL SENSITIVE HABITATS, WETLANDS, AND BIOTA

Deigan employed a terrestrial ecologist to conduct a site reconnaissance for potential sensitive habitats, wetlands, and biota. To update Deigan's information, Tetra Tech conducted a site reconnaissance to confirm the locations of two state endangered species and wetland areas associated with the North and South Ditches. Tetra Tech confirmed that the beach area is dominated by marram grass (*Amophila breviligulata*), little bluestem grass (*Schizachyrium scoparium*), and sand reed (*Calamovilfa longifolia*). Also, there are two state endangered species found on site:

- Marram grass (*Amophila breviligulata*), the dominant grass cover in the beach area, and
- Kalm's St. John's wort (*Hypericum kalmianum*). The *Hypericum* population is similar to the numbers documented by Deigan in 2004, and is located in the South Ditch.

### 3.3 SEDIMENT CONTAINMENT CELLS

Throughout U.S. EPA's involvement with Plant #2 after OMC's abandonment, U.S. EPA provided upkeep, continued sampling, and reporting for the sediment containment cells associated with the Plant #2 property. Upkeep of the containment cell systems included grass cutting, equipment repair and replacement, and operation.

Three sediment containment cells exist on or adjacent to the Plant #2 property and were built to hold sediment previously dredged from Waukegan Harbor. Two of the cells are located on the northern portion of the property along the north ditch and are maintained by groundwater pumping systems, which keep water levels within the cells below that of the surrounding water table. Electrical power was fed to the cells by power lines connected to the building power system. When the transformers were shut down and drained, electrical power needed to be supplied from an independent source. On July 11, 2003, U.S. EPA contractors installed new electric service to the two containment cells on the northern portion of the property. The third containment cell (Former Slip 3), located to the south of Plant #2 across Seahorse Drive, was originally connected to electrical power independently of the Plant #2 system. The location of the east sediment containment cell is illustrated in Figure 2.



On December 5, 2003, the containment cell systems were winterized and shut down for the season and in preparation for transferring responsibility for their operation to the City of Waukegan. The City of Waukegan has since contracted with River's Bend Engineering of Racine, Wisconsin, to operate and maintain the containment systems.



## 4.0 SUMMARY

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After PRP removal activities were conducted, U.S. EPA conducted waste removal activities at Plant #2 over a 9-week period beginning in May 2003. The removal activities included waste removal, floor decontamination, tunnel inspections, soil and groundwater sampling, asbestos removal, and transformer draining. Transformers were drained and left disconnected.

Upon abandonment of the Plant #2 property, U.S. EPA agreed to arrange for 24-hour security of the property and building. U.S. EPA also arranged for operation and maintenance of the treatment system associated with the sediment containment cells. As of December 10, 2003, the City of Waukegan was required to continue these operations.

In 2004, the City of Waukegan contracted Deigan to perform a site investigation in the lakefront area of the property. Soil and sediment sampling in 2004 and 2005 found elevated PCB concentrations in an area east of the east sediment containment cell, which may be a threat to human health and to the environment. *Several samples exceeded federal and state cleanup criteria for PCBs.*

In response to the discovery of PCB contamination outside the sediment containment cell, the U.S. EPA contracted Tetra Tech to perform an environmental site assessment that included sampling activities to confirm PCB concentrations and to further refine the extent of contamination. The results of Tetra Tech's soil sampling activities confirmed Deigan's sampling results and allowed U.S. EPA to refine the extent of a response action to remove PCB-contaminated soil. Sediment samples, however, did not confirm elevated PCB concentrations observed Deigan's samples from the South Ditch. A response will be necessary to address the potential for direct contact with contaminated soils and migration of contaminants to Lake Michigan.



## 5.0 RECOMMENDATIONS

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Removal of PCB-impacted soil is warranted because concentrations exceed federal criteria in soils that are available for direct contact to the general public. Soil samples collected from 0 to 2 feet bgs had concentrations above 10 ppm, and the highest concentration observed (14,000 ppm) was from this interval. High concentrations were also observed in the two to four foot interval (S-101, 1,420 ppm; S-105, 7,180 ppm). The assessment area is open to the public and is frequented daily by the public walking the beach along Lake Michigan. The assessment area consists of blowing and shifting sands, a dynamic environment that could expose higher concentrations of PCBs and allow direct contact. The assessment area is a sensitive ecosystem that contains two state-listed endangered species, Marram grass (*amophila breviligulata*), the dominant grass cover, and Kalm's St. John's wort (*hypericum kalmianum*). The presence of PCBs in an area outside the containment cells and in close proximity to Lake Michigan, itself a sensitive ecosystem, indicates that contaminants have a direct pathway to the lake.

There are numerous possibilities for sources of the PCB contamination observed in soils east of the east sediment containment cell. The close proximity of the contamination to the east containment cell suggests that PCBs in soil may be a result of a leak from the containment cell. The presence of PCBs may also be from construction of the cell, or the placement of contaminated material in this area. An overflow of the North Ditch may also have resulted in PCB contamination of soils, and other possible sources from Plant #2 may be the source.

Based on results of the sampling activities completed by U.S. EPA on August 18, 2005, several recommendations are warranted to minimize exposure to PCBs, and prevent releases to the environment. Tetra Tech's recommendations for future activities in the area east of the east sediment containment cell between the Plant #2 property boundary and the Lake Michigan beach are:

- Removal of surface soils (0 to 2 feet bgs) in areas where PCB concentrations exceed 10 ppm and removal of sub-surface soils (2 to 8 feet bgs) where PCB concentrations exceed 50 ppm.
- For surface soils, excavation to a minimum depth of two feet is recommended. The excavated soil should be replaced with clean soil containing less than 1 ppm PCBs. Backfill material could be taken from the surrounding soils, making sure that a minimum Marram grass plants are disturbed.



- Subsurface soils from two to eight feet bgs and greater than 50 ppm in concentration should also be excavated. Removal of subsurface soils will address the potential risk that these soils could possibly be exposed through wind action and shifting surface sands. Soils should be removed to the approximate depth of the groundwater interface, which ranged from five to eight feet bgs.
- Although Tetra Tech sediment samples did not confirm concentrations observed in Deigan samples from the South Ditch, sediment should be excavated from two locations corresponding to sample locations SSED02 and SSED05, to depths of about two feet. Excavation will not be conducted if locations coincide with endangered species.
- Using data obtained from sampling activities conducted by Deigan and Tetra Tech and compared to 40 CFR Part 761 cleanup requirements, estimates of soil volumes to be removed were calculated. Deigan evaluated data available from their sampling activities in July 2004, October 2004, May 2005 against IEPA Residential Soil Remediation Objectives, which is 1 ppm for PCBs, and calculated an estimated total soil volume of 3,300 cubic yards. Based on further evaluation using data collected in August 2005 by Tetra Tech and Deigan's 2004 data, as well as Figures 3 through 6, Tetra Tech estimates a total of 2,600 cubic yards of PCB-impacted soil exceed the 40 CFR Part 761 cleanup criterion of 10 ppm. Of this volume, approximately 2,100 cubic yards exceed 50 ppm.
- Excavated soils should be stockpiled on site until approval for disposal is received. If possible, soils suspected of containing greater than 50 ppm PCBs should be segregated from soils containing less than 50 ppm PCBs. Stockpiled soils should be placed on and covered by plastic sheeting to prevent wind and precipitation from distributing soils.
- Some as-built drawings of the east sediment containment cell are available and should be consulted to determine the horizontal extent of excavation along the eastern edge of the containment. Excavation should not be conducted in such proximity to the containment cell wall as to effect the stability of the cell. A 1:1 slope from the top of the containment cell wall should be maintained to ensure that support of the wall is not removed.
- Confirmation sampling should be conducted after removal is complete in each excavation location. The number and depth of samples should be based on the size and depth of excavation. All samples should be laboratory analyzed for PCBs. Categorization of the stockpiled soils should be done in accordance with landfill requirements.
- The excavation areas will likely contain one of two state endangered species, Marram grass and Kalm's St. John's wort, depending on where the excavation activities occur. Marram grass is



ubiquitous on the sand dunes, but less so in the area along the fence, where shrubs, trees, and disturbed soils are present. Every effort should be made to minimize the lateral extent of excavation and the disturbance of native vegetation, specifically Marram grass, during excavation of PCB-contaminated soils. Kalm's St. John's wort occurs in a limited area in the South Ditch. A small amount of sediment should be excavated from the South Ditch, although the area in which Kalm's St. John's wort occurs will be marked off, and no excavation should occur in that area. Excavation of sediment in the South Ditch should occur only in areas where endangered species are not present.





## REFERENCES

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- Deigan and Associates, LLC. 2004. Environmental Site Investigation Report, Former OMC Waukegan Property, Lake Michigan Study Area. November 29, 2004
- TechLaw, Inc. (TechLaw). 2001. "Preliminary Assessment/Visual Site Inspection Report and NCAPS Scoring Report for Outboard Marine Corporation, Waukegan, Illinois, EPA ID No. ILD000802837."
- Tetra Tech EM Inc. (Tetra Tech). 2002. "Discovery Site Visit Report for Outboard Marine Corporation, Waukegan, Lake County Illinois." May 10.
- Tetra Tech. 2003a. "PRP Removal Action Summary Report for Outboard Marine Corporation Plant #2, Waukegan, Lake County, Illinois." January 20.
- Tetra Tech. 2003b. "EPA Removal Action Summary Report for Outboard Marine Corporation Plant #2, Waukegan, Lake County, Illinois." December 12.
- U.S. Bankruptcy Court for the Northern District of Illinois - Eastern Division (U.S. Bankruptcy Court). 2002. "Settlement Agreement." July 17.
- U.S. Environmental Protection Agency (U.S. EPA). 2001. "Draft Sampling and Analysis Report for Outboard Marine Corporation, RCRA Facility, EPA ID No. ILD000802827."
- U.S. Geological Survey (USGS). 1993a. 7.5-Minute Series Topographic Map of Waukegan, Illinois, Quadrangle.
- USGS. 1993b. 7.5-Minute Series Topographic Map of Zion, Illinois-Wisconsin, Quadrangle.
- USGS. 2002. Aerial Photograph of Waukegan, Illinois.



**APPENDIX A**  
**SOIL SAMPLING AND SITE PHOTOGRAPHS**  
**(8 Pages)**





**Photograph No.:** 1

**Orientation:** North

**TDD Number:** S05-0507-002

**Date:** August 17, 2005

**Location:** Outboard Marine Corporation Plant #2

**Subject:** Area of reported transformer oil spill by CommEd. Note brown coloration along west edge of road.



**Photograph No.:** 2

**Orientation:** East

**TDD Number:** S05-0507-002

**Date:** August 17, 2005

**Location:** Outboard Marine Corporation Plant #2

**Subject:** Soil sampling location marked with a wooden stake (S-101).





**Photograph No.:** 3

**Orientation:** North

**TDD Number:** S05-0507-002

**Date:** August 17, 2005

**Location:** Outboard Marine Corporation Plant #2

**Subject:** Soil sampling locations within the fence (S-101 and S-102).



**Photograph No.:** 4

**Orientation:** Northeast

**TDD Number:** S05-0507-002

**Date:** August 17, 2005

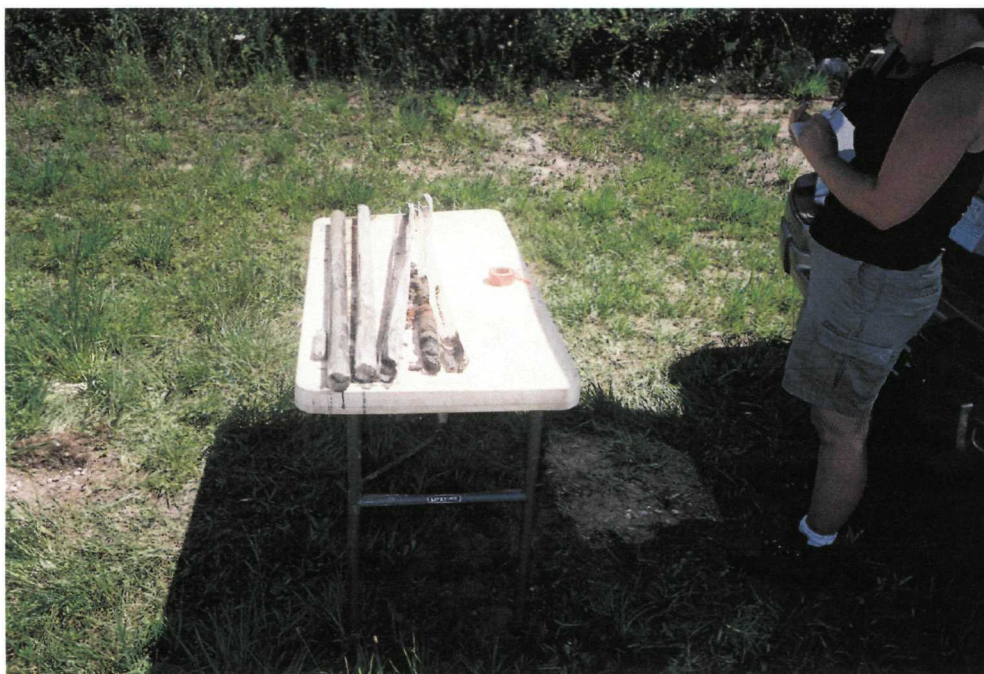
**Location:** Outboard Marine Corporation Plant #2

**Subject:** Gate in the fence leading to Lake Michigan Beach.



**Photograph No.:** 5  
**TDD Number:** S05-0507-002  
**Location:** Outboard Marine Corporation Plant #2  
**Subject:** Continuous soil sampling in progress with track mounted drilling rig using the direct push technique.

**Orientation:** Southeast  
**Date:** August 17, 2005



**Photograph No.:** 6  
**TDD Number:** S05-0507-002  
**Location:** Outboard Marine Corporation Plant #2  
**Subject:** Typical soil sample in clear acetate sleeves.

**Orientation:** East  
**Date:** August 17, 2005





**Photograph No.:** 7

**TDD Number:** S05-0507-002

**Location:** Outboard Marine Corporation Plant #2

**Subject:** Soil sampling using the track mounted drilling rig.

**Orientation:** North

**Date:** August 17, 2005



**Photograph No.:** 8

**TDD Number:** S05-0507-002

**Location:** Outboard Marine Corporation Plant #2

**Subject:** On-Site Environmental Services personnel moving the Geoprobe rig.

**Orientation:** Southwest

**Date:** August 17, 2005





**Photograph No.:** 9

**TDD Number:** S05-0507-002

**Location:** Outboard Marine Corporation Plant #2

**Subject:** START personnel identifying soil type and collecting soil samples.

**Orientation:** South

**Date:** August 17, 2005



**Photograph No.:** 10

**TDD Number:** S05-0507-002

**Location:** Outboard Marine Corporation Plant #2

**Subject:** START personnel recording field data and collecting soil samples.

**Orientation:** South

**Date:** August 17, 2005



**Photograph No.:** 11

**TDD Number:** S05-0507-002

**Location:** Outboard Marine Corporation Plant #2

**Subject:** Soil sampling with the drilling rig at sample location S-101.

**Orientation:** East

**Date:** August 17, 2005



**APPENDIX B  
FIELD NOTES**

**(7 Pages)**



29118  
29263

SOS-0507-002

7/15/05

1000 - Met Ken Theisen + Paul Riddler (Chum Hill)  
on the Onco Plant #2 site. We were there  
locate possible locations to sample soil  
from an area east of the east sediment containment  
cell. Deigan + Assoc. (consultant for the City  
of Waukegan) had performed some sampling  
and had found PCBs at elevated levels.  
We looked at some maps and figures to  
~~the~~ locate Deigan's samples. We then  
walked the dune area to see how many  
flagged locations we could find. Ken T.  
asked that we get GPS locations for each of  
Deigan's samples. Some brush clearance may  
need to be done.

We will need to collect samples at locations  
to confirm Deigan's results. Also we should  
sample to define the extent of PCBs better.

Procurement of geoprober and laboratory should  
be done first. Ken wants to see a plan  
of how we would sample.

1200 offsite

Kenneth W. Deigan

29342  
29470

SOS-0507-002

7/21/05

9:30am - K. Brown + Raquel Cramlet arrive  
onsite to locate soil sample locations  
that Deigan had installed. Will use  
GPS to collect location data. This will  
help us determine where to put confirmation  
samples. We spoke to a city crew and  
identified ourselves as USEPA contractors.  
They said there are crew mowing today.  
We will also identify ruderal plant species  
and try to flag them.

### Points

|            |          |      |
|------------|----------|------|
| S-25, S-33 | S-20     | S-36 |
| S-07       | S-23, 39 | S-37 |
| S-08       | S-24     | S-38 |
| S-10       | S-26     | S-40 |
| S-11       | S-27     | S-41 |
| S-13       | S-28     | S-42 |
| S-14       | S-29     | S-43 |
| S-15       | S-30     | S-44 |
| S-16       | S-31     | S-45 |
| S-17       | S-32     | S-46 |
| S-18       | S-34     | S-47 |
| S-19       | S-35     |      |

- 1300 We GPS'd the NW corner of T intersection of driveway that heads west (NWINT 1). NW corner of driveway leading to smelting (NWINT 2) NE corner of building (NE BLD). E side of road where curbe over east containment cell begins. Concrete changes to asphalt (NE ROAD)
- 1330 We walked the fence line to judge if we could get samples between the fence and the slurry wall.
- 1400 Raquel + Ken off site. Left gate locked

Kenneth D. S.

OMC

Soil Sampling

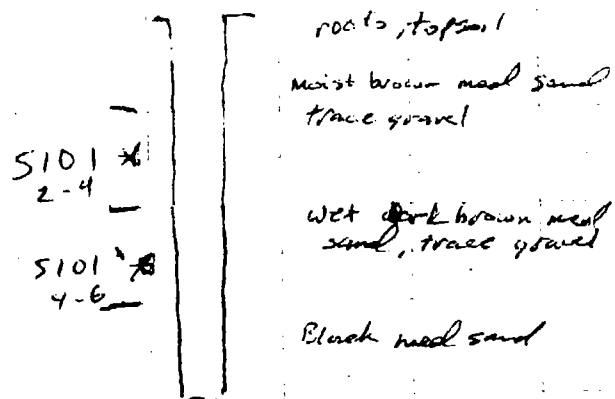
8-17-05

17 Aug 2005

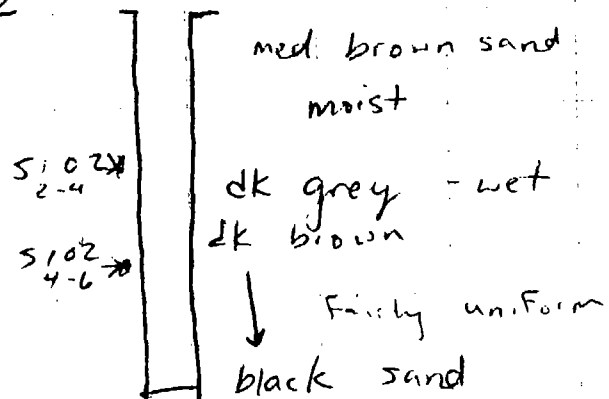
- Tt (Ken Brown + Raquel Cravet) arrive on site at 8:30am and begin marking sample locations.
- EPA arrived on site at 9:30am. Toured OMC building.
- 1115 On site arrived on site late after having trouble with IDOT.
- 11:30 Begin soil sampling with location S-101. Tt collected <sup>KS</sup> samples (2) from each boring.
- 1520 Tt collected 2 samples from surface soils from location of reported spill location of transformer fluid from Commonwealth Edison transformer. Tt will return tomorrow to collect GPS data and collect sediment samples.
- 3:30 OFF SITE

Kenneth D. S.

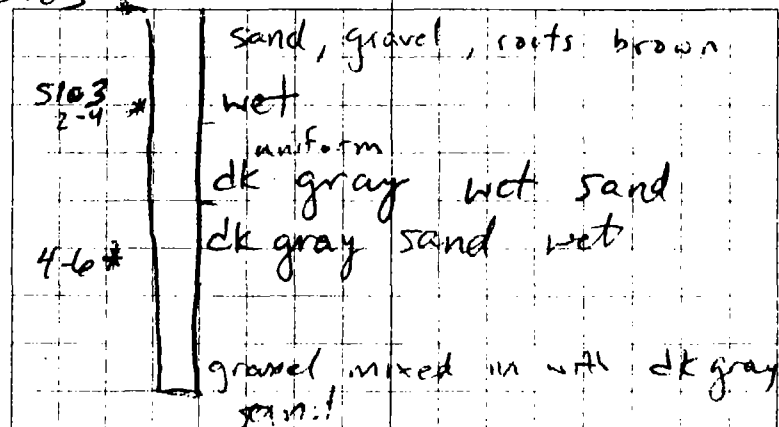
S101



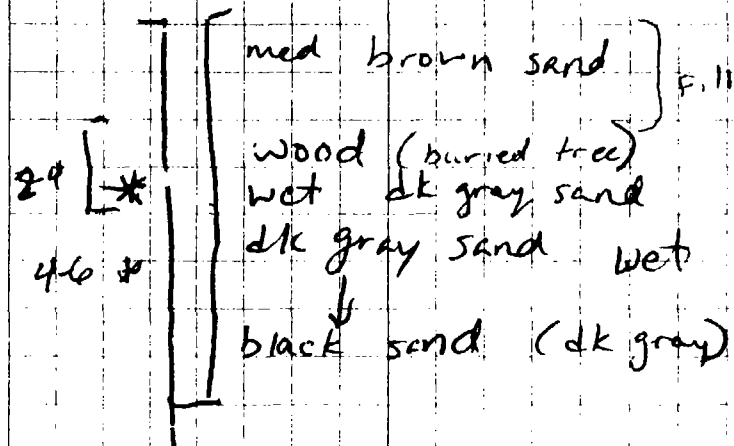
S102



S103



S104



S105 (S-34)

2-4 ft \*

dk gray

brown sand

red - brick

uniform  
dk gray sand

6-8 ft \*

darker

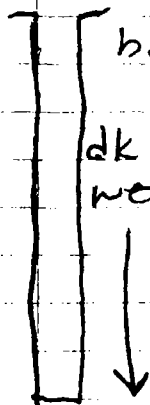
S106

2-4 \*

brown sand &amp; gravel

dk brown mottled - not color  
wet gray sand

4-6 \*



S107

0-2 \*

brown sand roots &amp; moss

~~0-2 \*~~lighter brown sand - moist  
black mottling above WT  
wet gray sand

4-6 \*

gray sand

dk gray sand

wet

S108

0-2 \*

Top soil  
brown med sand

gray moist sand

black wet sand

6-8 \*

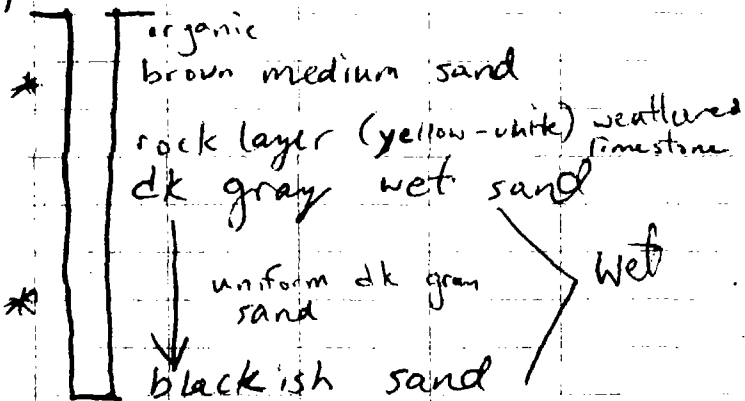
black



S109

(S-25)

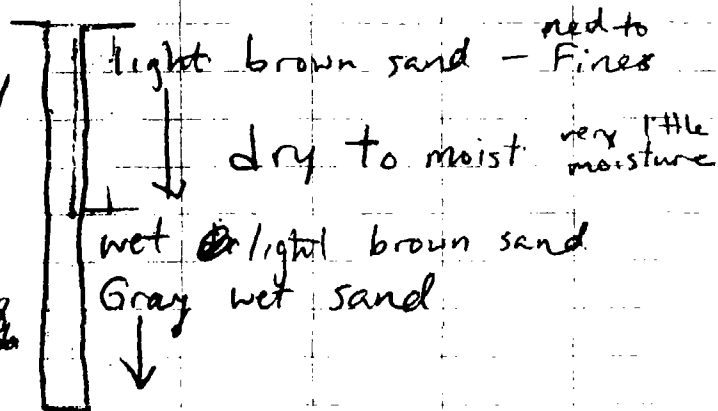
0-2 \*



6-8 \*

S110

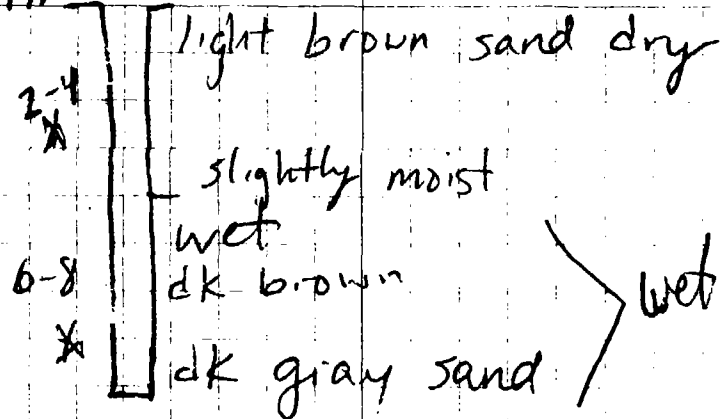
\* 2-4



6-8 \*

S111

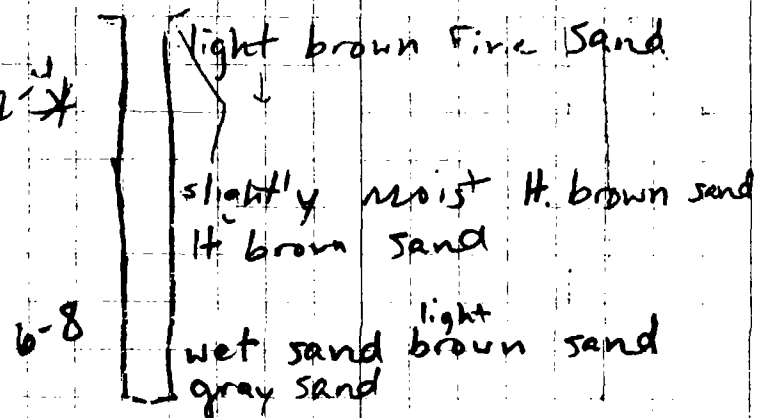
2-4 \*



6-8 \*

S112

2-4 \*



6-8

S113

2-4 organic/humms layer  
sand light brown fine } dry  
slightly moist brown fine sand  
light brown fine sand  
6-8 moist just bottom couple  
inches

S114

2-4 light brown fine sand - dry  
slightly moist  
6-8 wet lt. brown sand

S115

2-4 light brown med. sand  
darker brown  
blackish gray  
wet sand  
4-6 blackish gray wet sand  
" " " "

S116 - Grab sample located  
just east of water tower  
Location of <sup>ref. tea</sup> transformer oil spill  
S117 by Comm Edison

Grab sample South of S116

8-18-05

N + South ditch

Sediment Sampling

11:00 TT (Ken Brown + Raquel Cramlet)

arrive on site + began ~~map~~  
sampling sediments from South  
ditch. Raining. Marked  
sample location with stakes.

S ditch <sup>SSD101</sup>, SSD102, SSD103, SSD104  
lake → road

11:30 Took 1 sediment sample from  
North ditch - almost even with  
fence line in middle of ditch

N SED 101

~~12:00~~ off site Raquel Cramlet

\* Need to GPS locations of  
sediment samples + soil borings  
from yesterday. \*

30478  
30615

Jeff Wolark 847-625-6824

Onic

August 26, 2005

GPS

8-26-05

- TT arrived on site at 1130 to collect  
GPS data for points sampled last week.  
Noticed Ken Thiesen and Jeff Wolark (Whitney)  
that I was going to be on site.
  - 11:24 went back to points S-24 and S-47  
because our original GPS data did not look  
right.
- TT off site 1:30 pm. Will download GPS  
data at the office.

Kimberly [Signature]



**APPENDIX C**  
**DATA VALIDATION REPORTS AND VALIDATED ANALYTICAL RESULTS**  
**(18 Pages)**





**TETRA TECH EM INC.**

## **MEMORANDUM**

**Date:** September 16, 2005

**To:** Ken Brown, Project Manager, Tetra Tech EM Inc. (Tetra Tech)  
Superfund Technical Assessment and Response Team (START) for Region 5

**From:** Nancy McDonald, Chemist, Tetra Tech START for Region 5

**Subject:** Data Validation for  
Outboard Marine Company (OMC) Plant #2 Site  
Waukegan, Illinois  
Analytical Technical Direction Document (TDD) No. S05-0507-003  
Project TDD No. S05-0507-002

Great Lakes Analytical (GLA), Buffalo Grove, Illinois  
Work Orders No. B508393 and B508394  
Polychlorinated Biphenyl (PCB) Analysis of 37 Soil Samples

### **1.0 INTRODUCTION**

The Tetra Tech START for Region 5 validated PCB analytical data for 37 soil samples collected on August 17 and 18, 2005, at the OMC Plant #2 site in Waukegan, Illinois, during a site assessment. All samples were analyzed for PCBs under the above-referenced work orders by GLA using U.S. Environmental Protection Agency (U.S. EPA) SW-846 Method 8082.

The data were validated in general accordance with U.S. EPA's "Contract Laboratory Program National Functional Guidelines for Organic Data Review" dated October 1999. Organic data validation consisted of a review of the following quality control (QC) parameters: holding times, an instrument performance check, initial and continuing calibrations, blank results, surrogate recovery results, matrix spike and matrix spike duplicate (MS/MSD) results, laboratory control sample (LCS) results, internal standard (IS)

response, and target compound identification and quantitation.

Section 2.0 discusses the results of the organic data validation, and Section 3.0 presents an overall assessment of the data. The attachment to this memorandum contains GLA's summary of the analytical results as well as START's handwritten data qualifications where warranted.

## **2.0 ORGANIC DATA VALIDATION RESULTS**

The results of START's organic data validation are summarized below in terms of the QC parameters reviewed. The data qualifier listed below was applied to the sample analytical results where warranted (see the attachment).

- J - The analyte was detected. The reported numerical value is considered estimated for QC reasons.

### **2.1 HOLDING TIMES**

The holding time limits for PCB analysis of soil samples are 14 days to extraction and 40 days from extraction to analysis. The samples were extracted and analyzed within the holding time limits.

### **2.2 INSTRUMENT PERFORMANCE CHECK**

The chromatographic resolution was adequate for SW-846 Method 8082 gas chromatography.

### **2.3 INITIAL AND CONTINUING CALIBRATIONS**

Most initial calibration results were within the QC limit, which required a relative standard deviation (RSD) of 20 percent or less for the calibration factor (CF) of each peak for Aroclors 1016 and 1260. Four peaks were used for quantifying each Aroclor, and two of the individual peaks for Aroclor 1016 in the

calibration performed on August 29, 2005 yielded percent differences exceeding the QC limit, but the average response for the mixture was within the QC limit; therefore, no qualifications are warranted. All continuing calibration results were within the QC limit of less than or equal to a 15 percent difference between the mean CF of the initial calibration curve and the CF of the continuing calibration.

## **2.4 BLANK RESULTS**

The laboratory method blanks did not contain PCBs at detectable concentrations.

## **2.5 SURROGATE RECOVERY RESULTS**

All surrogate recovery results were within QC limits with the following exceptions. Surrogate recoveries for samples S-101 2-4, S-102 2-4, and S-105 2-4 were biased high and outside QC limits; therefore, all detected PCB results for samples S-101 2-4, S-102 2-4, and S-105 2-4 were qualified "J" as estimated, possibly biased high.

## **2.6 MS/MSD RESULTS**

The MS and MSD analyses were performed on samples S-103 2-4, S-104 2-4, and S-110 2-4. Recoveries for Aroclors 1016 and 1260 could not be reliably determined because of interferences from Aroclors 1242 and 1248 in the unspiked samples. Relative percent differences (RPD) between the MS and MSD results from 42 to 62 percent exceeded QC limits, implying heterogeneity in the samples; therefore, the detected PCB results for samples S-103 2-4, S-104 2-4, and S-110 2-4 were flagged "J" to indicate that the concentrations are considered estimated. This same heterogeneity may also apply to the other samples.



## **2.7 LCS RESULTS**

An LCS was analyzed with each analytical batch. All accuracy results were within QC limits.

## **2.8 IS RESPONSE**

ISs are not required for PCB analyses.

## **2.9 TARGET COMPOUND IDENTIFICATION AND QUANTITATION**

The identifications of Aroclors were acceptable. The calculation of one Aroclor result from each work order was checked and found to be correct. Because of the high concentrations of PCBs and non-target analytes in all samples, GLA analyzed the samples at 10- to 800,000-fold dilutions to bring the results within calibration range.

## **3.0 OVERALL ASSESSMENT OF DATA**

Overall, the sample analytical data generated by GLA are acceptable for use as qualified.

**ATTACHMENT**  
**GLA SUMMARY OF ANALYTICAL RESULTS**  
**(13 Sheets)**



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Project: OMC  
Project Number: G9009E0507002  
Project Manager: Ken Brown

Reported:  
09/01/05 15:08

**Polychlorinated Biphenyls by EPA Method 8082**  
**Great Lakes Analytical—Buffalo Grove**

| Analyte   | Result | Reporting Limit | Units     | Dilution | Batch   | Prepared | Analyzed | Method   | Notes |
|---|--------|-----------------|-----------|----------|---------|----------|----------|----------|-------|
| <b>S-SED 101 (B508393-01) Soil</b> Sampled: 08/18/05 11:00 Received: 08/23/05 08:50 <span style="float:right">QC</span> |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND     | 34.6            | ug/kg dry | 10       | 5080532 | 08/25/05 | 08/25/05 | EPA 8082 |       |
| PCB-1221  | ND     | 34.6            | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 34.6            | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | 2440   | 692             | "         | 200      | "       | "        | 08/30/05 | "        |       |
| PCB-1248  | ND     | 34.6            | "         | 10       | "       | "        | 08/25/05 | "        |       |
| PCB-1254  | ND     | 34.6            | "         | "        | "       | "        | "        | "        |       |
| PCB-1260  | ND     | 34.6            | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 67.8 %          | 10-121    | "        | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 68.6 %          | 10-127    | "        | "       | "        | "        | "        |       |
| <b>S-SED 102 (B508393-02) Soil</b> Sampled: 08/18/05 11:00 Received: 08/23/05 08:50 <span style="float:right">QC</span> |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND     | 172             | ug/kg dry | 50       | 5080558 | 08/26/05 | 08/29/05 | EPA 8082 |       |
| PCB-1221  | ND     | 172             | "         | "        | "       | "        | 08/29/05 | "        |       |
| PCB-1232  | ND     | 172             | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | 1810   | 345             | "         | 100      | "       | "        | 08/30/05 | "        |       |
| PCB-1248  | ND     | 172             | "         | 50       | "       | "        | 08/29/05 | "        |       |
| PCB-1254  | ND     | 172             | "         | "        | "       | "        | "        | "        |       |
| PCB-1260  | ND     | 172             | "         | "        | "       | "        | 08/29/05 | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 82.0 %          | 10-121    | "        | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 68.2 %          | 10-127    | "        | "       | "        | "        | "        |       |
| <b>S-SED 103 (B508393-03) Soil</b> Sampled: 08/18/05 11:15 Received: 08/23/05 08:50 <span style="float:right">QC</span> |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND     | 32.8            | ug/kg dry | 10       | 5080532 | 08/25/05 | 08/25/05 | EPA 8082 |       |
| PCB-1221  | ND     | 32.8            | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 32.8            | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | 4900   | 1640            | "         | 500      | "       | "        | 08/30/05 | "        |       |
| PCB-1248  | ND     | 32.8            | "         | 10       | "       | "        | 08/25/05 | "        |       |
| PCB-1254  | ND     | 32.8            | "         | "        | "       | "        | "        | "        |       |
| PCB-1260  | ND     | 32.8            | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 71.2 %          | 10-121    | "        | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 64.3 %          | 10-127    | "        | "       | "        | "        | "        |       |

at Lakes Analytical—Buffalo Grove

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Project Number: G9009E0507002  
Project Manager: Ken Brown

Reported:  
09/01/05 15:08

### Polychlorinated Biphenyls by EPA Method 8082

#### Great Lakes Analytical--Buffalo Grove

| Analyte   | Result | Reporting Limit | Units     | Dilution | Batch   | Prepared | Analyzed | Method   | Notes |
|---|--------|-----------------|-----------|----------|---------|----------|----------|----------|-------|
| S-SED 104 (B508393-04) Soil Sampled: 08/18/05 11:15 Received: 08/23/05 08:50 QC |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND     | 33.5            | ug/kg dry | 10       | 5080532 | 08/25/05 | 08/25/05 | EPA 8082 |       |
| PCB-1221  | ND     | 33.5            | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 33.5            | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | 1700   | 335             | "         | 100      | "       | "        | "        | "        |       |
| PCB-1248  | ND     | 33.5            | "         | 10       | "       | "        | 08/30/05 | "        |       |
| PCB-1254  | ND     | 33.5            | "         | "        | "       | "        | 08/25/05 | "        |       |
| PCB-1260  | ND     | 33.5            | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 73.4 %          | 10-121    | "        | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 61.6 %          | 10-127    | "        | "       | "        | "        | "        |       |
| N-SED 101 (B508393-05) Soil Sampled: 08/18/05 11:30 Received: 08/23/05 08:50 QC |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND     | 33.7            | ug/kg dry | 10       | 5080532 | 08/25/05 | 08/30/05 | EPA 8082 |       |
| PCB-1221  | ND     | 33.7            | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 33.7            | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | 1670   | 675             | "         | 200      | "       | "        | "        | "        |       |
| PCB-1248  | ND     | 33.7            | "         | 10       | "       | "        | "        | "        |       |
| PCB-1254  | ND     | 33.7            | "         | "        | "       | "        | "        | "        |       |
| PCB-1260  | ND     | 33.7            | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 77.2 %          | 10-121    | "        | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 87.6 %          | 10-127    | "        | "       | "        | "        | "        |       |

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Project Number: G9009E0507002  
Project Manager: Ken Brown

Reported:  
09/02/05 10:21

**Polychlorinated Biphenyls by EPA Method 8082**  
**Great Lakes Analytical--Buffalo Grove**

| Analyte   | Result    | Reporting Limit | Units     | Dilution | Batch   | Prepared | Analyzed | Method   | Notes |
|---|-----------|-----------------|-----------|----------|---------|----------|----------|----------|-------|
| <b>S-101 2-4 (B508394-01) Soil Sampled: 08/17/05 11:30 Received: 08/23/05 08:50</b> |           |                 |           |          |         |          |          |          |       |
| <b>O15, QC</b>  |           |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND        | 29.9            | ug/kg dry | 10       | 5080532 | 08/25/05 | 08/25/05 | EPA 8082 |       |
| PCB-1221  | ND        | 29.9            | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND        | 29.9            | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | ND        | 29.9            | "         | "        | "       | "        | "        | "        |       |
| PCB-1248  | 1420000 J | 299000          | "         | 100000   | "       | "        | 08/31/05 | "        |       |
| PCB-1254  | ND        | 29.9            | "         | 10       | "       | "        | 08/25/05 | "        |       |
| PCB-1260  | ND        | 29.9            | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |           | 58.0 %          | 10-121    | "        | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |           | 193 %           | 10-127    | "        | "       | "        | "        | "        | H     |
| <b>S-101 4-6 (B508394-02) Soil Sampled: 08/17/05 11:30 Received: 08/23/05 08:50</b> |           |                 |           |          |         |          |          |          |       |
| <b>QC</b>   |           |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND        | 30.8            | ug/kg dry | 10       | 5080532 | 08/25/05 | 08/25/05 | EPA 8082 |       |
| PCB-1221  | ND        | 30.8            | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND        | 30.8            | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | ND        | 30.8            | "         | "        | "       | "        | "        | "        |       |
| PCB-1248  | 77200     | 15400           | "         | 5000     | "       | "        | 08/30/05 | "        |       |
| PCB-1254  | ND        | 30.8            | "         | 10       | "       | "        | 08/25/05 | "        |       |
| PCB-1260  | ND        | 30.8            | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |           | 72.2 %          | 10-121    | "        | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |           | 74.2 %          | 10-127    | "        | "       | "        | "        | "        |       |
| <b>S-102 2-4 (B508394-03) Soil Sampled: 08/17/05 11:45 Received: 08/23/05 08:50</b> |           |                 |           |          |         |          |          |          |       |
| <b>O15, QC</b>  |           |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND        | 2930            | ug/kg dry | 1000     | 5080532 | 08/25/05 | 08/28/05 | EPA 8082 |       |
| PCB-1221  | ND        | 2930            | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND        | 2930            | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | ND        | 2930            | "         | "        | "       | "        | "        | "        |       |
| PCB-1248  | 483000 J  | 117000          | "         | 40000    | "       | "        | 08/31/05 | "        |       |
| PCB-1254  | ND        | 2930            | "         | 1000     | "       | "        | 08/28/05 | "        |       |
| PCB-1260  | ND        | 2930            | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |           | 128 %           | 10-121    | "        | "       | "        | "        | "        | H     |
| Surrogate: Decachlorobiphenyl   |           | 190 %           | 10-127    | "        | "       | "        | "        | "        | H     |

UM 9.14-05

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Reported:  
09/02/05 10:21

### Polychlorinated Biphenyls by EPA Method 8082

#### Great Lakes Analytical--Buffalo Grove

| Analyte   | Result | Reporting Limit | Units     | Dilution | Batch   | Prepared | Analyzed | Method   | Notes |
|---|--------|-----------------|-----------|----------|---------|----------|----------|----------|-------|
| S-102 4-6 (B508394-04) Soil Sampled: 08/17/05 11:45 Received: 08/23/05 08:50 QC |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND     | 30.8            | ug/kg dry | 10       | 5080532 | 08/25/05 | 08/25/05 | EPA 8082 |       |
| PCB-1221  | ND     | 30.8            | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 30.8            | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | ND     | 30.8            | "         | "        | "       | "        | "        | "        |       |
| PCB-1248  | 1270   | 308             | "         | 100      | "       | "        | 08/26/05 | "        |       |
| PCB-1254  | ND     | 30.8            | "         | 10       | "       | "        | 08/25/05 | "        |       |
| PCB-1260  | ND     | 30.8            | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 81.0 %          | 10-121    |          | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 75.7 %          | 10-127    |          | "       | "        | "        | "        |       |
| S-103 2-4 (B508394-05) Soil Sampled: 08/17/05 12:15 Received: 08/23/05 08:50 QC |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND     | 25.7            | ug/kg dry | 10       | 5080532 | 08/25/05 | 08/26/05 | EPA 8082 |       |
| PCB-1221  | ND     | 25.7            | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 25.7            | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | ND     | 25.7            | "         | "        | "       | "        | "        | "        |       |
| PCB-1248  | 1970 J | 513             | "         | 200      | "       | "        | "        | "        |       |
| PCB-1254  | ND     | 25.7            | "         | 10       | "       | "        | "        | "        |       |
| PCB-1260  | ND     | 25.7            | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 82.1 %          | 10-121    |          | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 102 %           | 10-127    |          | "       | "        | "        | "        |       |
| S-103 4-6 (B508394-06) Soil Sampled: 08/17/05 12:15 Received: 08/23/05 08:50 QC |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | 88.5   | 29.7            | ug/kg dry | 10       | 5080558 | 08/26/05 | 08/31/05 | EPA 8082 |       |
| PCB-1221  | ND     | 29.7            | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 29.7            | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | ND     | 29.7            | "         | "        | "       | "        | "        | "        |       |
| PCB-1248  | 87.8   | 29.7            | "         | "        | "       | "        | "        | "        |       |
| PCB-1254  | ND     | 29.7            | "         | "        | "       | "        | "        | "        |       |
| PCB-1260  | ND     | 29.7            | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 66.2 %          | 10-121    |          | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 91.4 %          | 10-127    |          | "       | "        | "        | "        |       |

10/17 9-14-05



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Reported:  
09/02/05 10:21

### Polychlorinated Biphenyls by EPA Method 8082

#### Great Lakes Analytical—Buffalo Grove

| Analyte  | Result    | Reporting Limit | Units     | Dilution | Batch   | Prepared | Analyzed | Method   | Notes |
|--|-----------|-----------------|-----------|----------|---------|----------|----------|----------|-------|
| <b>S-104 2-4 (B508394-07) Soil</b> Sampled: 08/17/05 12:30 Received: 08/23/05 08:50 <span style="float:right">QC</span>      |           |                 |           |          |         |          |          |          |       |
| PCB-1016   | ND        | 152             | ug/kg dry | 50       | 5080558 | 08/26/05 | 08/30/05 | EPA 8082 |       |
| PCB-1221   | ND        | 152             | "         | "        | "       | "        | "        | "        |       |
| PCB-1232   | ND        | 152             | "         | "        | "       | "        | "        | "        |       |
| PCB-1242   | 2310 J    | 1520            | "         | 500      | "       | "        | 08/31/05 | "        |       |
| PCB-1248   | 2030 J    | 1520            | "         | "        | "       | "        | "        | "        |       |
| PCB-1254   | ND        | 152             | "         | 50       | "       | "        | 08/30/05 | "        |       |
| PCB-1260   | ND        | 152             | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene   |           | 90.0 %          | 10-121    | "        | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl  |           | 100 %           | 10-127    | "        | "       | "        | "        | "        |       |
| <b>S-104 4-6 (B508394-08) Soil</b> Sampled: 08/17/05 12:30 Received: 08/23/05 08:50 <span style="float:right">QC</span>      |           |                 |           |          |         |          |          |          |       |
| PCB-1016   | 395       | 129             | ug/kg dry | 50       | 5080558 | 08/26/05 | 08/29/05 | EPA 8082 |       |
| PCB-1221   | ND        | 129             | "         | "        | "       | "        | "        | "        |       |
| PCB-1232   | ND        | 129             | "         | "        | "       | "        | "        | "        |       |
| PCB-1242   | ND        | 129             | "         | "        | "       | "        | "        | "        |       |
| PCB-1248   | 465       | 129             | "         | "        | "       | "        | "        | "        |       |
| PCB-1254   | ND        | 129             | "         | "        | "       | "        | "        | "        |       |
| PCB-1260   | ND        | 129             | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene   |           | 71.3 %          | 10-121    | "        | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl  |           | 99.0 %          | 10-127    | "        | "       | "        | "        | "        |       |
| <b>S-105 2-4 (B508394-09) Soil</b> Sampled: 08/17/05 13:00 Received: 08/23/05 08:50 <span style="float:right">OIS, QC</span> |           |                 |           |          |         |          |          |          |       |
| PCB-1016   | ND        | 6710            | ug/kg dry | 2000     | 5080558 | 08/26/05 | 08/30/05 | EPA 8082 |       |
| PCB-1221   | ND        | 6710            | "         | "        | "       | "        | "        | "        |       |
| PCB-1232   | ND        | 6710            | "         | "        | "       | "        | "        | "        |       |
| PCB-1242   | ND        | 6710            | "         | "        | "       | "        | "        | "        |       |
| PCB-1248   | 7180000 J | 2680000         | "         | 800000   | "       | "        | 09/01/05 | "        |       |
| PCB-1254   | ND        | 6710            | "         | 2000     | "       | "        | 08/30/05 | "        |       |
| PCB-1260   | ND        | 6710            | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene   |           | 162 %           | 10-121    | "        | "       | "        | "        | "        | H     |
| Surrogate: Decachlorobiphenyl  |           | 342 %           | 10-127    | "        | "       | "        | "        | "        | H     |

UM 9-14-05



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Project Number: G9009E0507002  
Project Manager: Ken Brown

Reported:  
09/02/05 10:21

### Polychlorinated Biphenyls by EPA Method 8082

#### Great Lakes Analytical—Buffalo Grove

| Analyte   | Result | Reporting Limit | Units     | Dilution | Batch   | Prepared | Analyzed | Method   | Notes |
|---|--------|-----------------|-----------|----------|---------|----------|----------|----------|-------|
| <b>S-105 6-8 (B508394-10) Soil</b> Sampled: 08/17/05 13:00 Received: 08/23/05 08:50 <span style="float:right">QC</span> |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND     | 132             | ug/kg dry | 50       | 5080558 | 08/26/05 | 08/29/05 | EPA 8082 |       |
| PCB-1221  | ND     | 132             | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 132             | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | ND     | 132             | "         | "        | "       | "        | "        | "        |       |
| PCB-1248  | 2770   | 1320            | "         | 500      | "       | "        | 08/30/05 | "        |       |
| PCB-1254  | ND     | 132             | "         | 50       | "       | "        | 08/29/05 | "        |       |
| PCB-1260  | ND     | 132             | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 71.7 %          | 10-121    | "        | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 86.2 %          | 10-127    | "        | "       | "        | "        | "        |       |
| <b>S-106 2-4 (B508394-11) Soil</b> Sampled: 08/17/05 13:00 Received: 08/23/05 08:50 <span style="float:right">QC</span> |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | 494    | 133             | ug/kg dry | 50       | 5080558 | 08/26/05 | 08/29/05 | EPA 8082 |       |
| PCB-1221  | ND     | 133             | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 133             | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | ND     | 133             | "         | "        | "       | "        | "        | "        |       |
| PCB-1248  | 667    | 265             | "         | 100      | "       | "        | 08/30/05 | "        |       |
| PCB-1254  | ND     | 133             | "         | 50       | "       | "        | 08/29/05 | "        |       |
| PCB-1260  | ND     | 133             | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 93.1 %          | 10-121    | "        | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 97.7 %          | 10-127    | "        | "       | "        | "        | "        |       |
| <b>S-106 4-6 (B508394-12) Soil</b> Sampled: 08/17/05 13:00 Received: 08/23/05 08:50 <span style="float:right">QC</span> |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND     | 150             | ug/kg dry | 50       | 5080558 | 08/26/05 | 08/29/05 | EPA 8082 |       |
| PCB-1221  | ND     | 150             | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 150             | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | ND     | 150             | "         | "        | "       | "        | "        | "        |       |
| PCB-1248  | 37500  | 15000           | "         | 5000     | "       | "        | 08/31/05 | "        |       |
| PCB-1254  | ND     | 150             | "         | 50       | "       | "        | 08/29/05 | "        |       |
| PCB-1260  | ND     | 150             | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 91.7 %          | 10-121    | "        | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 94.6 %          | 10-127    | "        | "       | "        | "        | "        |       |

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09/02/05 10:21

### Polychlorinated Biphenyls by EPA Method 8082

#### Great Lakes Analytical--Buffalo Grove

| Analyte   | Result | Reporting Limit | Units     | Dilution | Batch   | Prepared | Analyzed | Method   | Notes |
|---|--------|-----------------|-----------|----------|---------|----------|----------|----------|-------|
| S-107 0-2 (B508394-13) Soil Sampled: 08/17/05 13:15 Received: 08/23/05 08:50 QC |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | 476    | 135             | ug/kg dry | 50       | 5080558 | 08/26/05 | 08/29/05 | EPA 8082 |       |
| PCB-1221  | ND     | 135             | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 135             | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | ND     | 135             | "         | "        | "       | "        | "        | "        |       |
| PCB-1248  | 708    | 270             | "         | 100      | "       | "        | 08/31/05 | "        |       |
| PCB-1254  | ND     | 135             | "         | 50       | "       | "        | 08/29/05 | "        |       |
| PCB-1260  | ND     | 135             | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 108 %           | 10-121    | "        | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 112 %           | 10-127    | "        | "       | "        | "        | "        |       |
| S-107 4-6 (B508394-14) Soil Sampled: 08/17/05 13:15 Received: 08/23/05 08:50 QC |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND     | 140             | ug/kg dry | 50       | 5080558 | 08/26/05 | 08/29/05 | EPA 8082 |       |
| PCB-1221  | ND     | 140             | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 140             | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | ND     | 140             | "         | "        | "       | "        | "        | "        |       |
| F 1243  | 18200  | 5600            | "         | 2000     | "       | "        | 08/31/05 | "        |       |
| F 1254  | ND     | 140             | "         | 50       | "       | "        | 08/29/05 | "        |       |
| PCB-1260  | ND     | 140             | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 96.4 %          | 10-121    | "        | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 98.4 %          | 10-127    | "        | "       | "        | "        | "        |       |
| S-108 0-2 (B508394-15) Soil Sampled: 08/17/05 13:15 Received: 08/23/05 08:50 QC |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND     | 159             | ug/kg dry | 50       | 5080558 | 08/26/05 | 08/29/05 | EPA 8082 |       |
| PCB-1221  | ND     | 159             | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 159             | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | ND     | 159             | "         | "        | "       | "        | "        | "        |       |
| PCB-1248  | 1610   | 319             | "         | 100      | "       | "        | 08/31/05 | "        |       |
| PCB-1254  | ND     | 159             | "         | 50       | "       | "        | 08/29/05 | "        |       |
| PCB-1260  | ND     | 159             | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 36.0 %          | 10-121    | "        | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 103 %           | 10-127    | "        | "       | "        | "        | "        |       |

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### Polychlorinated Biphenyls by EPA Method 8082

#### Great Lakes Analytical--Buffalo Grove

| Analyte   | Result | Reporting Limit | Units     | Dilution | Batch   | Prepared | Analyzed | Method   | Notes |
|---|--------|-----------------|-----------|----------|---------|----------|----------|----------|-------|
| <b>S-108 6-8 (B508394-16) Soil</b> Sampled: 08/17/05 13:15 Received: 08/23/05 08:50 <span style="float:right">QC</span> |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND     | 27.5            | ug/kg dry | 10       | 5080558 | 08/26/05 | 08/31/05 | EPA 8082 |       |
| PCB-1221  | ND     | 27.5            | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 27.5            | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | ND     | 27.5            | "         | "        | "       | "        | "        | "        |       |
| PCB-1248  | 50.5   | 27.5            | "         | "        | "       | "        | "        | "        |       |
| PCB-1254  | ND     | 27.5            | "         | "        | "       | "        | "        | "        |       |
| PCB-1260  | ND     | 27.5            | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 81.2 %          | 10-121    |          | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 94.0 %          | 10-127    |          | "       | "        | "        | "        |       |
| <b>S-109 0-2 (B508394-17) Soil</b> Sampled: 08/17/05 13:45 Received: 08/23/05 08:50 <span style="float:right">QC</span> |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND     | 129             | ug/kg dry | 50       | 5080558 | 08/26/05 | 08/29/05 | EPA 8082 |       |
| PCB-1221  | ND     | 129             | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 129             | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | ND     | 129             | "         | "        | "       | "        | "        | "        |       |
| PCB-1248  | 36600  | 10300           | "         | 4000     | "       | "        | 08/31/05 | "        |       |
| PCB-1254  | ND     | 129             | "         | 50       | "       | "        | 08/29/05 | "        |       |
| PCB-1260  | ND     | 129             | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 91.9 %          | 10-121    |          | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 88.3 %          | 10-127    |          | "       | "        | "        | "        |       |
| <b>S-109 6-8 (B508394-18) Soil</b> Sampled: 08/17/05 13:45 Received: 08/23/05 08:50 <span style="float:right">QC</span> |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND     | 133             | ug/kg dry | 50       | 5080558 | 08/26/05 | 08/29/05 | EPA 8082 |       |
| PCB-1221  | ND     | 133             | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 133             | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | ND     | 133             | "         | "        | "       | "        | "        | "        |       |
| PCB-1248  | 518    | 133             | "         | "        | "       | "        | "        | "        |       |
| PCB-1254  | ND     | 133             | "         | "        | "       | "        | "        | "        |       |
| PCB-1260  | ND     | 133             | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 79.2 %          | 10-121    |          | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 93.8 %          | 10-127    |          | "       | "        | "        | "        |       |

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### Polychlorinated Biphenyls by EPA Method 8082

#### Great Lakes Analytical—Buffalo Grove

| Analyte   | Result | Reporting Limit | Units     | Dilution | Batch   | Prepared | Analyzed | Method   | Notes |
|---|--------|-----------------|-----------|----------|---------|----------|----------|----------|-------|
| <b>S-110 2-4 (B508394-19) Soil</b> Sampled: 08/17/05 14:00 Received: 08/23/05 08:50 <span style="float:right">QC</span> |        |                 |           |          |         |          |          |          |       |
| *CB-1016  | ND     | 133             | ug/kg dry | 50       | 5080557 | 08/26/05 | 08/28/05 | EPA 8082 |       |
| *CB-1221  | ND     | 133             | "         | "        | "       | "        | "        | "        |       |
| *CB-1232  | ND     | 133             | "         | "        | "       | "        | "        | "        |       |
| *CB-1242  | ND     | 133             | "         | "        | "       | "        | "        | "        |       |
| *CB-1248  | 410    | 133             | "         | "        | "       | "        | "        | "        |       |
| *CB-1254  | ND     | 133             | "         | "        | "       | "        | "        | "        |       |
| *CB-1260  | ND     | 133             | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 101 %           | 10-121    |          | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 89.5 %          | 10-127    |          | "       | "        | "        | "        |       |
| <b>S-110 6-8 (B508394-20) Soil</b> Sampled: 08/17/05 14:00 Received: 08/23/05 08:50 <span style="float:right">QC</span> |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND     | 153             | ug/kg dry | 50       | 5080557 | 08/26/05 | 08/31/05 | EPA 8082 |       |
| PCB-1221  | ND     | 153             | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 153             | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | 510    | 153             | "         | "        | "       | "        | "        | "        |       |
| P 248   | ND     | 153             | "         | "        | "       | "        | "        | "        |       |
| PCB-1254  | ND     | 153             | "         | "        | "       | "        | "        | "        |       |
| PCB-1260  | ND     | 153             | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 103 %           | 10-121    |          | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 114 %           | 10-127    |          | "       | "        | "        | "        |       |
| <b>S-111 2-4 (B508394-21) Soil</b> Sampled: 08/17/05 14:15 Received: 08/23/05 08:50 <span style="float:right">QC</span> |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND     | 116             | ug/kg dry | 50       | 5080557 | 08/26/05 | 08/31/05 | EPA 8082 |       |
| PCB-1221  | ND     | 116             | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 116             | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | ND     | 116             | "         | "        | "       | "        | "        | "        |       |
| PCB-1248  | 377    | 116             | "         | "        | "       | "        | "        | "        |       |
| PCB-1254  | ND     | 116             | "         | "        | "       | "        | "        | "        |       |
| PCB-1260  | ND     | 116             | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 102 %           | 10-121    |          | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 108 %           | 10-127    |          | "       | "        | "        | "        |       |

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### Polychlorinated Biphenyls by EPA Method 8082

#### Great Lakes Analytical--Buffalo Grove

| Analyte   | Result | Reporting Limit | Units     | Dilution | Batch   | Prepared | Analyzed | Method   | Notes |
|---|--------|-----------------|-----------|----------|---------|----------|----------|----------|-------|
| S-111 6-8 (B508394-22) Soil Sampled: 08/17/05 14:15 Received: 08/23/05 08:50 QC |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND     | 137             | ug/kg dry | 50       | 5080557 | 08/26/05 | 08/29/05 | EPA 8082 |       |
| PCB-1221  | ND     | 137             | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 137             | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | ND     | 137             | "         | "        | "       | "        | "        | "        |       |
| PCB-1248  | 1170   | 548             | "         | 200      | "       | "        | 08/31/05 | "        |       |
| PCB-1254  | ND     | 137             | "         | 50       | "       | "        | 08/29/05 | "        |       |
| PCB-1260  | ND     | 137             | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 96.7 %          | 10-121    |          | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 111 %           | 10-127    |          | "       | "        | "        | "        |       |
| S-112 2-4 (B508394-23) Soil Sampled: 08/17/05 14:30 Received: 08/23/05 08:50 QC |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND     | 26.0            | ug/kg dry | 10       | 5080557 | 08/26/05 | 08/31/05 | EPA 8082 |       |
| PCB-1221  | ND     | 26.0            | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 26.0            | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | ND     | 26.0            | "         | "        | "       | "        | "        | "        |       |
| PCB-1248  | 80.6   | 26.0            | "         | "        | "       | "        | "        | "        |       |
| PCB-1254  | ND     | 26.0            | "         | "        | "       | "        | "        | "        |       |
| PCB-1260  | ND     | 26.0            | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 85.5 %          | 10-121    |          | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 106 %           | 10-127    |          | "       | "        | "        | "        |       |
| S-112 6-8 (B508394-24) Soil Sampled: 08/17/05 14:30 Received: 08/23/05 08:50 QC |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND     | 134             | ug/kg dry | 50       | 5080557 | 08/26/05 | 08/29/05 | EPA 8082 |       |
| PCB-1221  | ND     | 134             | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 134             | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | ND     | 134             | "         | "        | "       | "        | "        | "        |       |
| PCB-1248  | 423    | 134             | "         | "        | "       | "        | "        | "        |       |
| PCB-1254  | ND     | 134             | "         | "        | "       | "        | "        | "        |       |
| PCB-1260  | ND     | 134             | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 95.5 %          | 10-121    |          | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 88.4 %          | 10-127    |          | "       | "        | "        | "        |       |

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Reported:  
09/02/05 10:21

### Polychlorinated Biphenyls by EPA Method 8082

#### Great Lakes Analytical--Buffalo Grove

| Analyte   | Result | Reporting Limit | Units     | Dilution | Batch   | Prepared | Analyzed | Method   | Notes |
|---|--------|-----------------|-----------|----------|---------|----------|----------|----------|-------|
| <b>S-113 2-4 (B508394-25) Soil Sampled: 08/17/05 14:30 Received: 08/23/05 08:50</b> |        |                 |           |          |         |          |          |          |       |
| QC  |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND     | 25.6            | ug/kg dry | 10       | 5080557 | 08/26/05 | 08/31/05 | EPA 8082 |       |
| PCB-1221  | ND     | 25.6            | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 25.6            | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | ND     | 25.6            | "         | "        | "       | "        | "        | "        |       |
| PCB-1248  | 40.2   | 25.6            | "         | "        | "       | "        | "        | "        |       |
| PCB-1254  | ND     | 25.6            | "         | "        | "       | "        | "        | "        |       |
| PCB-1260  | ND     | 25.6            | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 84.4 %          | 10-121    |          | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 102 %           | 10-127    |          | "       | "        | "        | "        |       |
| <b>S-113 6-8 (B508394-26) Soil Sampled: 08/17/05 14:45 Received: 08/23/05 08:50</b> |        |                 |           |          |         |          |          |          |       |
| QC  |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND     | 43.1            | ug/kg dry | 20       | 5080557 | 08/26/05 | 08/31/05 | EPA 8082 |       |
| PCB-1221  | ND     | 43.1            | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 43.1            | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | ND     | 43.1            | "         | "        | "       | "        | "        | "        |       |
| PCB-1248  | 86.9   | 43.1            | "         | "        | "       | "        | "        | "        |       |
| PCB-1254  | ND     | 43.1            | "         | "        | "       | "        | "        | "        |       |
| PCB-1260  | ND     | 43.1            | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 91.9 %          | 10-121    |          | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 103 %           | 10-127    |          | "       | "        | "        | "        |       |
| <b>S-114 2-4 (B508394-27) Soil Sampled: 08/17/05 14:55 Received: 08/23/05 08:50</b> |        |                 |           |          |         |          |          |          |       |
| QC  |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND     | 23.1            | ug/kg dry | 10       | 5080557 | 08/26/05 | 08/31/05 | EPA 8082 |       |
| PCB-1221  | ND     | 23.1            | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 23.1            | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | ND     | 23.1            | "         | "        | "       | "        | "        | "        |       |
| PCB-1248  | ND     | 23.1            | "         | "        | "       | "        | "        | "        |       |
| PCB-1254  | ND     | 23.1            | "         | "        | "       | "        | "        | "        |       |
| PCB-1260  | ND     | 23.1            | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 86.3 %          | 10-121    |          | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 102 %           | 10-127    |          | "       | "        | "        | "        |       |

at Lakes Analytical--Buffalo Grove

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Project: OMC  
Project Number: G9009E0507002  
Project Manager: Ken Brown

Reported:  
09/02/05 10:21

### Polychlorinated Biphenyls by EPA Method 8082

#### Great Lakes Analytical-Buffalo Grove

| Analyte   | Result | Reporting Limit | Units     | Dilution | Batch   | Prepared | Analyzed | Method   | Notes |
|---|--------|-----------------|-----------|----------|---------|----------|----------|----------|-------|
| <b>S-114 6-8 (B508394-28) Soil</b> Sampled: 08/17/05 15:00 Received: 08/23/05 08:50 <span style="float:right">QC</span> |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND     | 141             | ug/kg dry | 50       | 5080557 | 08/26/05 | 08/28/05 | EPA 8082 |       |
| PCB-1221  | ND     | 141             | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 141             | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | ND     | 141             | "         | "        | "       | "        | "        | "        |       |
| PCB-1248  | 240    | 141             | "         | "        | "       | "        | "        | "        |       |
| PCB-1254  | ND     | 141             | "         | "        | "       | "        | "        | "        |       |
| PCB-1260  | ND     | 141             | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 96.1 %          | 10-121    | "        | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 95.8 %          | 10-127    | "        | "       | "        | "        | "        |       |
| <b>S-115 2-4 (B508394-29) Soil</b> Sampled: 08/17/05 15:00 Received: 08/23/05 08:50 <span style="float:right">QC</span> |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | 267    | 64.6            | ug/kg dry | 20       | 5080557 | 08/26/05 | 09/01/05 | EPA 8082 |       |
| PCB-1221  | ND     | 64.6            | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 64.6            | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | ND     | 64.6            | "         | "        | "       | "        | "        | "        |       |
| PCB-1248  | 263    | 64.6            | "         | "        | "       | "        | "        | "        |       |
| PCB-1254  | ND     | 64.6            | "         | "        | "       | "        | "        | "        |       |
| PCB-1260  | ND     | 64.6            | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 72.2 %          | 10-121    | "        | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 82.3 %          | 10-127    | "        | "       | "        | "        | "        |       |
| <b>S-115 4-6 (B508394-30) Soil</b> Sampled: 08/17/05 15:00 Received: 08/23/05 08:50 <span style="float:right">QC</span> |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND     | 30.3            | ug/kg dry | 10       | 5080557 | 08/26/05 | 08/30/05 | EPA 8082 |       |
| PCB-1221  | ND     | 30.3            | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 30.3            | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | ND     | 30.3            | "         | "        | "       | "        | "        | "        |       |
| PCB-1248  | 150    | 30.3            | "         | "        | "       | "        | "        | "        |       |
| PCB-1254  | ND     | 30.3            | "         | "        | "       | "        | "        | "        |       |
| PCB-1260  | ND     | 30.3            | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 62.1 %          | 10-121    | "        | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 77.3 %          | 10-127    | "        | "       | "        | "        | "        |       |

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Project: OMC  
Project Number: G9009E0507002  
Project Manager: Ken Brown

Reported:  
09/02/05 10:21

### Polychlorinated Biphenyls by EPA Method 8082

#### Great Lakes Analytical--Buffalo Grove

| Analyte   | Result | Reporting Limit | Units     | Dilution | Batch   | Prepared | Analyzed | Method   | Notes |
|---|--------|-----------------|-----------|----------|---------|----------|----------|----------|-------|
| <b>S-116 0-6 (B508394-31) Soil</b> Sampled: 08/17/05 15:25 Received: 08/23/05 08:50 <span style="float: right;">QC</span> |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND     | 207             | ug/kg dry | 50       | 5080557 | 08/26/05 | 08/30/05 | EPA 8082 |       |
| PCB-1221  | ND     | 207             | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 207             | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | ND     | 207             | "         | "        | "       | "        | "        | "        |       |
| PCB-1248  | 1900   | 414             | "         | 100      | "       | "        | 08/31/05 | "        |       |
| PCB-1254  | ND     | 207             | "         | 50       | "       | "        | 08/30/05 | "        |       |
| PCB-1260  | ND     | 207             | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 86.6 %          | 10-121    | "        | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 63.3 %          | 10-127    | "        | "       | "        | "        | "        |       |
| <b>S-117 0-6 (B508394-32) Soil</b> Sampled: 08/17/05 15:25 Received: 08/23/05 08:50 <span style="float: right;">QC</span> |        |                 |           |          |         |          |          |          |       |
| PCB-1016  | ND     | 135             | ug/kg dry | 50       | 5080557 | 08/26/05 | 08/30/05 | EPA 8082 |       |
| PCB-1221  | ND     | 135             | "         | "        | "       | "        | "        | "        |       |
| PCB-1232  | ND     | 135             | "         | "        | "       | "        | "        | "        |       |
| PCB-1242  | ND     | 135             | "         | "        | "       | "        | "        | "        |       |
| PCB-1248  | 1420   | 541             | "         | 200      | "       | "        | 08/31/05 | "        |       |
| PCB-1254  | ND     | 135             | "         | 50       | "       | "        | 08/30/05 | "        |       |
| PCB-1260  | ND     | 135             | "         | "        | "       | "        | "        | "        |       |
| Surrogate: Tetrachloro-meta-xylene  |        | 88.0 %          | 10-121    | "        | "       | "        | "        | "        |       |
| Surrogate: Decachlorobiphenyl   |        | 74.9 %          | 10-127    | "        | "       | "        | "        | "        |       |

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